



STIC Search Report

EIC 2600

STIC Database Tracking Number: 196235

TO: Julie Anne Watko
Location: Knox 8A75
Art Unit : 2627
Friday, July 28, 2006

Case Serial Number: 10788688

From: Virgil O. Tyler(ASRC)
Location: EIC 2600
KNX-8B68
Phone: 571-272-8536

Virgil.Tyler@uspto.gov

Search Notes

Dear Examiner Watko,

Attached are the search results (from commercial databases) for your case.

Tags mark the patent/articles, which might be of interest. After you review all records including tagged and untagged records, if you wish to order the complete text of any record, please submit request(s) directly to the STIC-EIC 2600 Email Box or hand carry the request to the front desk of the respective EIC.

Please call if you have any questions or suggestions. I have enclosed a Search Results Feedback Form to facilitate further comments or suggestions. Please take a few minutes to share with us your feedback.

Thanks

Virgil O. Tyler

Virgil O. Tyler, CLIN Assistant
Technical Information Specialist
ASRC Aerospace Corporation
EIC 2600



File 348:EUROPEAN PATENTS 1978-2006/ 200630

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File 349:PCT FULLTEXT 1979-2006/UB=20060727,UT=20060720

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Set	Items	Description
S1	47755	MAGNETIC(3N)STORAGE OR HDD OR HARD() (DISC OR DISK) ()DRIVE?? OR HARD()DRIVE??
S2	2454	(HEAD?? OR PICK()UP OR PICKUP OR TRANSDUCER?? OR SLIDER?? - OR READ()SENSOR?? OR WRITER???) (10N)S1
S3	209	(MAGNETORESISTIVE OR MR OR GMR OR (GIANT OR COLOSSAL) () (MA- GNETORESISTIVE OR MAGNETO()RESISTIVE) OR SVMR OR SV OR TJ OR - TMR OR TJMR OR TUNNEL()JUNCTION OR SPIN()VALVE OR SPIN()BULB)- (10N)S2
S4	102	((AP OR ANTI()PARALLEL OR SAF OR SELF) (3N) (PINNED OR FIXED) OR FERRIMAGNETIC?(3N)COUPL??? OR RKKY) (5N) (LAYER?? OR LAMINA- R??)
S5	57854	(AXIS OR AXIS(2N)MAGNET?) (3N) (CANTED OR SLANTED OR INCLINED OR DIAGONAL OR OBLIQUE OR ANGLE?? OR DEGREE??)
S6	378	(ABS OR AIR()BEARING()SURFACE?? OR FACING) (10N)S5
S7	71	AU=(GILL, H? OR GILL H?)
S8	0	S3(3N)S4
S9	0	S3(S)S4
S10	2	S3 AND S4
S11	0	S3(3N) (S5 OR S6)
S12	0	S3(S) (S5 OR S6)
S13	7	S3 AND (S5 OR S6)
S14	7	S13 NOT S10
S15	0	S4(3N) (S5 OR S6)
S16	3	S4(S) (S5 OR S6)
S17	3	S16 NOT (S10 OR S14)
S18	8	(S3:S6) AND S7
S19	8	S18 NOT (S10 OR S14)
S20	6	S19 AND IC=G11B?
S21	10	(S10 OR S14 OR S16:S20) NOT (MRAM OR MEMORY OR (WORD OR BI- T) ()LINE??)

10/3,K/1 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
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01675190

Flux guide in the bearing surface of a magnetoresistive head
Flussleiter in der Lauffläche eines Magnetowiderstandkopfes
Guide de flux dans la surface portante d'une tête magnetoresistive
PATENT ASSIGNEE:

QUANTUM CORPORATION, (567673), 501 Sycamore Drive, Milpitas, CA 95035,
(US), (Applicant designated States: all)

INVENTOR:

Wu, Andrew L., 15 High Street, Shrewsbury, Massachusetts 01545, (US)

LEGAL REPRESENTATIVE:

Charig, Raymond Julian et al (79692), Eric Potter Clarkson, Park View
House, 58 The Ropewalk, Nottingham NG1 5DD, (GB)

PATENT (CC, No, Kind, Date): EP 1376543 A2 040102 (Basic)
EP 1376543 A3 050817

APPLICATION (CC, No, Date): EP 2003253992 030625;

PRIORITY (CC, No, Date): US 183329 020625

DESIGNATED STATES: AT; BE; BG; CH; CY; CZ; DE; DK; EE; ES; FI; FR; GB; GR;
HU; IE; IT; LI; LU; MC; NL; PT; RO; SE; SI; SK; TR

EXTENDED DESIGNATED STATES: AL; LT; LV; MK

INTERNATIONAL PATENT CLASS (V7): G11B-005/39; G11B-005/31; H01L-043/00;
H01F-010/32

ABSTRACT WORD COUNT: 39

NOTE:

Figure number on first page: 2

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200401	307
SPEC A	(English)	200401	3365
Total word count - document A			3672
Total word count - document B			0
Total word count - documents A + B			3672

...SPECIFICATION relates generally to data storage systems and, more specifically, to data storage systems having read **heads** which employ **magnetoresistive** sensors.

As **storage** density increases, the **magnetic** field being sensed during read by a **magnetoresistive** sensor in a read head of a data storage system becomes smaller. Thus, there is...

...Optionally, and as shown, the pinned layer 95 can be implemented as a "synthetic antiferromagnetic" (**SAF**) **pinned layer** , which includes two opposed pinned layers of CoFe, shown as pinned layer 104 and reference...

10/3,K/2 (Item 1 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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01109879 **Image available**

SUPPRESSION OF THERMAL NOISE USING SPIN TRANSFER IN MAGNETORESISTIVE ELEMENTS

SUPPRESSION DU BRUIT THERMIQUE AU MOYEN D'UN TRANSFERT DE SPIN DANS DES ELEMENTS MAGNETORESISTANTS

Patent Applicant/Assignee:

SEAGATE TECHNOLOGY LLC, 920 Disc Drive, Scotts Valley, CA 95066, US, US
(Residence), US (Nationality)

Inventor(s):

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Legal Representative:

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Pittsburgh, PA 15222, US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200432157 A1 20040415 (WO 0432157)

Application: WO 2003US29913 20030925 (PCT/WO US03029913)

Priority Application: US 2002414844 20020930

Designated States:

(Protection type is "patent" unless otherwise stated - for applications
prior to 2004)

AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ
EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK
LR LS LT LU LV MA MD MG MK MN MW MX MZ NI NO NZ OM PG PH PL PT RO RU SC
SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG UZ VC VN YU ZA ZM ZW
(EP) AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LU MC NL PT RO SE
SI SK TR
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZM ZW
(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 6082

Fulltext Availability:

Detailed Description

Detailed Description

... to suppress noise due to thermally activated magnetization
fluctuations.

BACKGROUND OF THE INVENTION

In a **magnetic** data **storage** and retrieval system, a magnetic
recording **head** typically includes a read head having a
magnetoresistive (**MR**) sensor for retrieving magnetically encoded
information stored on a magnetic
disc. Magnetic flux from the...

...and 2. MR stack 60 includes pinned reference layer 62, first spacer
layer 64, free **layer** 66, second spacer **layer** 68, **pinned** synthetic
antiferromagnetic (**SAF**) 70, and pinning **layer** 72. Free layer 66 is
typically made of a soft ferromagnetic material (e.g., CoFe...

...reference layer 62 and free layer 66. Second spacer layer 68 is
positioned between free **layer** 66 and **pinned SAF** 70. First
spacer **layer** 64 is typically made of a nonmagnetic metal such as
copper,
Second spacer layer 68...

14/3,K/1 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
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00812859

Magnetoresistive recording head

Magnetoresistiver Aufnahmekopf

Tete d'enregistrement magnetoresistive

PATENT ASSIGNEE:

Hewlett-Packard Company, A Delaware Corporation, (3016020), 3000 Hanover
Street, Palo Alto, CA 94304, (US), (Proprietor designated states: all)

INVENTOR:

Brug, James A., 205 Marmona Drive, Menlo Park, CA 94025, (US)

Bhattacharyya, Manoj K., 1650 Heron Avenue, Sunnyvale, CA 94087, (US)

LEGAL REPRESENTATIVE:

Powell, Stephen David et al (52312), WILLIAMS, POWELL & ASSOCIATES, 4 St
Paul's Churchyard, London EC4M 8AY, (GB)

PATENT (CC, No, Kind, Date): EP 755048 A1 970122 (Basic)
EP 755048 B1 011107

APPLICATION (CC, No, Date): EP 96304676 960625;

PRIORITY (CC, No, Date): US 503679 950718

DESIGNATED STATES: DE; FR; GB

INTERNATIONAL PATENT CLASS (V7): G11B-005/39; G01R-033/09

ABSTRACT WORD COUNT: 267

NOTE:

Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	EPAB97	804
CLAIMS B	(English)	200145	394
CLAIMS B	(German)	200145	429
CLAIMS B	(French)	200145	473
SPEC A	(English)	EPAB97	4141
SPEC B	(English)	200145	4096
Total word count - document A			4946
Total word count - document B			5392
Total word count - documents A + B			10338

...ABSTRACT A magnetoresistive (MR) sensor (100) for use as a read element
in a read/write **head** of a **magnetic storage** device operates on the
giant magnetoresistive effect produced by a **spin valve** . In a
preferred embodiment, the present invention includes a pair of spin
valves (30, 50...

SPECIFICATION The present invention relates generally to recording **heads**
for **magnetic storage** media. More particularly, the recording **head**
of the present invention incorporates **magnetoresistive** elements for
sensing the magnetic fields recorded on the magnetic storage media and
effectively rejects...

...SPECIFICATION B1

The present invention relates generally to recording **heads** for
magnetic storage media. More particularly, the recording **head** of the
present invention incorporates **magnetoresistive** elements for sensing
the magnetic fields recorded on the magnetic storage media and
effectively rejects...

...CLAIMS fixed magnetization (16) parallel to a first axis, a rotatable magnetization (14), and a first **angle** between said first **axis** and the direction of said rotatable magnetization (14) which decreases in the presence of a...

...a fixed magnetization parallel to said first axis, a rotatable magnetization (14'), and a second **angle** between said first **axis** and the direction of said rotatable magnetization (14') which increases in the presence of a...

14/3,K/2 (Item 2 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
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00721804

Digital output magnetoresistive head
Magnetoresistiver Kopf mit digitaler Ausgabe
Tete magnetoresistive avec sortie numerique
PATENT ASSIGNEE:

QUANTUM CORPORATION, (567671), 500 McCarthy Boulevard, Milpitas
California 95035, (US), (applicant designated states: DE;FR;GB;IT;NL)

INVENTOR:

Che, Xiaodong, 1120 Kensington Avenue, Sunnyvale, California 94087, (US)

LEGAL REPRESENTATIVE:

Goodman, Christopher et al (31122), Eric Potter Clarkson, Park View
House, 58 The Ropewalk, Nottingham NG1 5DD, (GB)

PATENT (CC, No, Kind, Date): EP 682339 A2 951115 (Basic)
EP 682339 A3 960124
EP 682339 B1 980624

APPLICATION (CC, No, Date): EP 95303067 950504;

PRIORITY (CC, No, Date): US 239243 940506

DESIGNATED STATES: DE; FR; GB; IT; NL

INTERNATIONAL PATENT CLASS (V7): G11B-005/39; G11B-005/127; G11B-005/00;
G11B-020/00;

ABSTRACT WORD COUNT: 121

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS B	(English)	9826	1628
CLAIMS B	(German)	9826	1657
CLAIMS B	(French)	9826	1876
SPEC B	(English)	9826	5244
Total word count - document A			0
Total word count - document B			10405
Total word count - documents A + B			10405

...SPECIFICATION magnetoresistive ("MR") heads and sensors have been used for reading magnetic information stored on both **magnetic** disk and tape **storage** systems. **Magnetoresistive heads** are capable of producing high signal output with low noise that is independent of media...The maximum change in magnetic orientation of the sensor element layer is limited to 90 **degrees** from its easy **axis** and typically must be constrained to even more limited rotation to provide for operation in...

...of alternating magnetic polarity.

In accordance with principles of the invention a multilayered digital output **magnetoresistive** ("DOMR") **head** provides a substantially digital output for playback in **magnetic** data **storage** devices, whether

disk or tape. The preferred device comprises one or more "pinned" magnetic layers...

CLAIMS 1. A **magnetoresistive head** for reading magnetic information digitally recorded on a **magnetic storage** medium (100,118), the **head** comprising a magnetic digital switching layer (12,28) separated from a pinned magnetic layer (16...

14/3,K/3 (Item 3 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
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00474963

Multilayer which shows magnetoresistive effect and magnetoresistive element using the same.

Mehrsicht Film mit magnetoresistiven Effekt und magnetoresistives Element.
Film multicouche presentant un effet magneto-resistant et element magneto-resistant utilisant celui-ci.

PATENT ASSIGNEE:

HITACHI, LTD., (204141), 6, Kanda Surugadai 4-chome, Chiyoda-ku, Tokyo 101, (JP), (applicant designated states: DE;FR)

INVENTOR:

Nakatani, Ryoichi, 22-5, Aburadai, Akikawa-shi, Tokyo 197, (JP)

Kitada, Masahiro, 1-8-81, Sakae-cho, Hamura-machi, Nihitama-gun, Tokyo 190-11, (JP)

Hosoe, Yuzuru, 6-45-10, Hirayama, Hino-shi, Tokyo 191, (JP)

LEGAL REPRESENTATIVE:

Patentanwalte Beetz - Timpe - Siegfried Schmitt-Fumian - Mayr (100712), Steinsdorfstrasse 10, D-80538 Munchen, (DE)

PATENT (CC, No, Kind, Date): EP 490327 A1 920617 (Basic)
EP 490327 B1 941228

APPLICATION (CC, No, Date): EP 91121114 911209;

PRIORITY (CC, No, Date): JP 90401027 901210; JP 91110128 910515

DESIGNATED STATES: DE; FR

INTERNATIONAL PATENT CLASS (V7): H01F-010/00;

ABSTRACT WORD COUNT: 51

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS B	(English)	EPBBF2	723
CLAIMS B	(German)	EPBBF2	636
CLAIMS B	(French)	EPBBF2	774
SPEC B	(English)	EPBBF2	13430
Total word count - document A			0
Total word count - document B			15563
Total word count - documents A + B			15563

...SPECIFICATION a multilayer in which ferromagnetic layers and nonferromagnetic layers are layered on each other, the **angle** between the hard **axis** direction of the multilayer film and the direction of detecting an outer magnetic field in...shows magnetoresistive effect and which is provided with excellent high-frequency property, by setting the **angle** between the easy **axis** direction of a ferromagnetic layer with a relatively high coercive force and the easy axis...
...shows magnetoresistive effect and has excellent high-frequency property can be obtained, by setting the **angle** between the easy **axis** direction of a ferromagnetic layer with a relatively high coercive force and the

easy axis...

...layer of nonferromagnetic layers is preferably 1.5 to 2.5 nm. By setting the **angle** between the easy **axis** direction of the multilayer film and the direction of detecting an outer magnetic field in...a layer with a relatively high coercive force preferably make almost right angle. If the **angle** between the easy **axis** directions of the two layers is then 75 to 90 (degree), substantially the same results...because hard axis direction has a higher permeability than easy axis direction. The difference in **angle** between the hard **axis** direction of multilayer film and the direction of detecting a magnetic field is preferably 10...higher specific magnetic permeability than the easy axis direction of the multilayer. The difference in **angle** between the hard **axis** direction of the multilayer and the direction for detecting a magnetic field is preferably 10...regeneration are formed at different places on an identical single substrate.

By applying the magnetic **head** to a **magnetic storage** apparatus, a highly potential **magnetic storage** apparatus can be obtained as well.
Example 21

Using the **magnetoresistive** element of the present invention, a magnetic head was prepared. The structure of the magnetic...can be used as a magnetic field sensor without any bias field. By setting the **angle** between the easy **axis** direction of the multilayer film in the state where a bias field is not applied...

...angle, a magnetoresistive element excellent in high-frequency property can be obtained. By setting the **angle** between the easy **axis** direction of the multilayer film in the state where a bias field is not applied...

...CLAIMS 5. The magnetoresistive element as claimed in any of claims 1 to 4, wherein the **angle** between the hard **axis** direction of the multilayer film and the direction for detecting an outer magnetic field in...

...of claims 6 to 14, characterized by having two types of ferromagnetic layers, wherein the **angle** between the easy **axis** directions of said two types of ferromagnetic layers is 75 to 90(degree).

16. The...

14/3,K/4 (Item 1 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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01256282 **Image available**

HIGH SENSITIVITY MAGNETIC BUILT-IN CURRENT SENSOR
CAPTEUR DE COURANT INTEGRE MAGNETIQUE A SENSIBILITE ELEVE

Patent Applicant/Assignee:

KONINKLIJKE PHILIPS ELECTRONICS N V, Groenewoudseweg 1, NL-5621 BA
Eindhoven, NL, NL (Residence), NL (Nationality), (For all designated
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Patent Applicant/Inventor:

DE WILDE Johannes, c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven, NL, NL
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PINEDA DE GYVEZ Jose D J, c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven, NL
, NL (Residence), MX (Nationality), (Designated only for: US)
DE JONG Franciscus G M, c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven, NL,
NL (Residence), NL (Nationality), (Designated only for: US)
HUISKEN Josephus A, c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven, NL, NL
(Residence), NL (Nationality), (Designated only for: US)

BOEVE Hans M B, c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven, NL, BE
(Residence), BE (Nationality), (Designated only for: US)
PHAN LE Kim, c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven, NL, NL
(Residence), VN (Nationality), (Designated only for: US)

Legal Representative:

ELEVELD Koop J (et al) (agent), Prof. Holstlaan 6, NL-5656 AA Eindhoven,
NL,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200564356 A2-A3 20050714 (WO 0564356)
Application: WO 2004IB52857 20041220 (PCT/WO IB04052857)
Priority Application: EP 2003104937 20031223; EP 2004105805 20041116

Designated States:

(All protection types applied unless otherwise stated - for applications
2004+)

AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM
DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC
LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NI NO NZ OM PG PH PL PT RO
RU SC SD SE SG SK SL SM SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM
ZW

(EP) AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LT LU MC NL PL
PT RO SE SI SK TR

(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG

(AP) BW GH GM KE LS MW MZ NA SD SL SZ TZ UG ZM ZW

(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 15424

Fulltext Availability:

Detailed Description

Claims

Detailed Description

... hysteresis.

The current sensing device may have a free magnetic layer which has an
easy **axis** oriented at an **angle** between 70' and 110', preferably to
be substantially perpendicular to a field being measured...

...easy axis, wherein the magnetisation direction of the pinned magnetic
layer is oriented at an **angle**, with the easy **axis** of the free
magnetic layer, preferably between 0' and 180', more preferred between
45 and...

...feature is that the sensor element has a free magnetic layer which has
an easy **axis** oriented at an **angle**, preferably between 70' and 110',
more preferred substantially perpendicular to the field being measured...

Claim

... signal. This enabled, in principle, MRAMs for general applications. A
decade after its discovery the **GMR** effect is already applied in
commercial products like **HDD** read **heads** and magnetic sensors.
A breakthrough in the field of magnetic tunnel junctions around 1995
1...axis. However it is not excluded that the measured current I_x is
oriented at an **angle** with the easy **axis**; even though, in most cases
the parallel arrangement is the optimum choice. Furthermore, to suppress
...easy axis, wherein the magnetisation direction of the pinned magnetic
layer is oriented at an **angle**, with the easy **axis** of the free
magnetic layer, preferably between 45' and 135', more preferred
substantially perpendicular to...

14/3,K/5 (Item 2 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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01256281 **Image available**

FLUX GUIDES FOR MAGNETIC FIELD SENSORS AND MEMORIES

GUIDES DE FLUX MAGNETIQUE POUR CAPTEURS DE CHAMP MAGNETIQUE ET MEMOIRES

Patent Applicant/Assignee:

KONINKLIJKE PHILIPS ELECTRONICS N V, Groenewoudseweg 1, NL-5621 BA
Eindhoven, NL, NL (Residence), NL (Nationality), (For all designated
states except: US)

Patent Applicant/Inventor:

PHAN LE Kim, c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven, NL, NL
(Residence), VN (Nationality), (Designated only for: US)

Legal Representative:

ELEVELD Koop J (et al) (agent), Prof. Holstlaan 6, NL-5656 AA Eindhoven,
NL,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200564357 A2-A3 20050714 (WO 0564357)

Application: WO 2004IB52834 20041216 (PCT/WO IB04052834)

Priority Application: EP 2003104936 20031223

Designated States:

(All protection types applied unless otherwise stated - for applications
2004+)

AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM
DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC
LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NI NO NZ OM PG PH PL PT RO
RU SC SD SE SG SK SL SM SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM
ZW

(EP) AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LT LU MC NL PL
PT RO SE SI SK TR

(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG

(AP) BW GH GM KE LS MW MZ NA SD SL SZ TZ UG ZM ZW

(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 11614

Fulltext Availability:

Detailed Description

Claims

Detailed Description

... 50%. The TMR sensor is a promising candidate for the future
high-density magnetic read- heads in hard disk drives . Depending
on the type and construction, an MR sensor is more sensitive in one
direction and less sensitive in another direction in the...
...signal. This enabled, in principle, MRAMs for general applications. A
decade after its discovery the GMR effect is already applied in
commercial products like HDD read heads and magnetic sensors.

A breakthrough in the field of magnetic tunnel junctions around 1995
1...

Claim

... claim, the sensing element comprising a pinned magnetic layer having a
magnetization oriented at an angle to the easy axis of the free
magnetic layer. H. The sensor of claim IO, wherein the angle is...

14/3,K/6 (Item 3 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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01171462 **Image available**

METHOD AND SYSTEM FOR PROVIDING A MAGNETIC MEMORY HAVING A WRAPPED WRITE LINE

PROCEDE ET SYSTEME FOURNISSANT UNE MEMOIRE MAGNETIQUE AYANT UNE LIGNE D'ECRITURE ENROULEE

Patent Applicant/Assignee:

APPLIED SPINTRONICS TECHNOLOGY INC, 830 Hillview Court, Suite 100,
Milpitas, CA 95035, US, US (Residence), US (Nationality)

Inventor(s):

TSANG David, 21677 Rainbow Drive, Cupertino, CA 95014, US,

Legal Representative:

MITCHELL Janyce R (et al) (agent), Sawyer Law Group LLP, P.O. Box 51418,
Palo Alto, CA 94303, US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200493085 A2-A3 20041028 (WO 0493085)

Application: WO 2004US9337 20040326 (PCT/WO US04009337)

Priority Application: US 2003458392 20030331; US 2004781478 20040217

Designated States:

(All protection types applied unless otherwise stated - for applications 2004+)

AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM
DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC
LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NI NO NZ OM PG PH PL PT RO
RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW
(EP) AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LU MC NL PL PT RO
SE SI SK TR
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG
(AP) BW GH GM KE LS MW MZ SD SL SZ TZ UG ZM ZW
(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 7747

Fulltext Availability:

Detailed Description

Detailed Description

... rotate the magnetization in the free layer 210, 21 OA, and 210B close to ninety **degrees** from its easy **axis** , and then a relatively small current in the bit line 220, 220A, and 220B, respectively...

...candidate of for such a material is Nickel-iron film, which has been used for **magnetoresistive read sensors** in **hard drives** and has been shown to be capable of carrying a current in excess of approximately ...

14/3,K/7 (Item 4 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00173723

**THIN FILM MAGNETIC ELEMENT HAVING A RHOMBIC SHAPE
ELEMENT MAGNETIQUE RHOMBIFORME A COUCHE MINCE**

Patent Applicant/Assignee:

EASTMAN KODAK COMPANY,

Inventor(s):

SMITH Neil,

Patent and Priority Information (Country, Number, Date):

Patent: WO 9007179 A1 19900628

Application: WO 89US5584 19891214 (PCT/WO US8905584)

Priority Application: US 88178 19881216

Designated States:

(Protection type is "patent" unless otherwise stated - for applications prior to 2004)

AT BE CH DE ES FR GB IT JP LU NL SE

Publication Language: English

Fulltext Word Count: 3119

Fulltext Availability:

Detailed Description

Detailed Description

... thin, thin-magnetic film is used in a variety of diverse applications, serving, for example, as a **storage** element in **magnetic** memories, as a soft adjacent biasing layer in **magnetoresistive heads** and as a recording medium in magneto-optic memories. An PCr/US89/05584
important and...80 rotates the magnetization 74' so the angle 72' between the magnetization and the easy **axis** 51 is 90 **degrees** and the magnetization 741 is in the direction of the hard axis 7&, Under these...

17/3,K/1 (Item 1 from file: 348)

DIALOG(R)File 348:EUROPEAN PATENTS

(c) 2006 European Patent Office. All rts. reserv.

02056265

Magnetic random access memory with stacked toggle memory cells

Magnetischer Direktzugriffsspeicher mit gestapelten Kippschalterspeicherzellen

Memoire d'accès aleatoire magnetique avec cellules empilees de memoire a bascule

PATENT ASSIGNEE:

Maglabs, Inc., (5053520), 333 West San Carlos Street, no. 1600, San Jose, California 95110, (US), (Applicant designated States: all)

INVENTOR:

Ju, Kochan, 15840 Lancaster Road, Monte Sereno, CA 95030-3059, (US)
Allegranza, Oletta, 15840 Lancaster Road, Monte Sereno, CA 95030-3059, (US)

LEGAL REPRESENTATIVE:

Calderbank, Thomas Roger et al (50122), Mewburn Ellis LLP York House 23 Kingsway, London WC2B 6HP, (GB)

PATENT (CC, No, Kind, Date): EP 1659631 A2 060524 (Basic)

APPLICATION (CC, No, Date): EP 2005256129 050930;

PRIORITY (CC, No, Date): US 991993 041118; US 185331 050720

DESIGNATED STATES: AT; BE; BG; CH; CY; CZ; DE; DK; EE; ES; FI; FR; GB; GR; HU; IE; IS; IT; LI; LT; LU; LV; MC; NL; PL; PT; RO; SE; SI; SK; TR

EXTENDED DESIGNATED STATES: AL; BA; HR; MK; YU

INTERNATIONAL CLASSIFICATION (V8 + ATTRIBUTES):

IPC + Level Value Position Status Version Action Source Office:

H01L-0027/22 A I F B 20060101 20051215 H EP

H01L-0043/08 A I L B 20060101 20051215 H EP

G11C-0011/15 A I L B 20060101 20051215 H EP

ABSTRACT WORD COUNT: 158

NOTE:

Figure number on first page: 6

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200621	2041
SPEC A	(English)	200621	5844
Total word count - document A			7885
Total word count - document B			0
Total word count - documents A + B			7885

...SPECIFICATION is described in U.S. Patent 5,408,377, and an MTJ memory cell with **SAF** free and **pinned layers** is described in U.S. Patent 5,966,012. The Savtchenko type of MRAM uses two orthogonal writing or programming lines, but with the MTJ cell's **axis** aligned 45 **degrees** to each of the lines. The SAF free layer responds to applied magnetic fields differently...

17/3,K/2 (Item 2 from file: 348)

DIALOG(R)File 348:EUROPEAN PATENTS

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01563946

Method for modifying switching field characteristics of magnetic tunnel junctions

Verfahren zum Andern der Schaltfeldeigenschaften von magnetischen

Tunnelubergangen

Methode pour modifier les caracteristiques du champ de transition de jonctions tunnel magnetiques

PATENT ASSIGNEE:

Hewlett-Packard Company, (206037), 3000 Hanover Street, Palo Alto, CA 94304, (US), (Proprietor designated states: all)

INVENTOR:

Anthony, Thomas, 1161 Pimento Avenue, Sunnyvale, California 94087, (US)
Tran, Lung, 5086 Woodbrae Ct., Saratoga, California 95070, (US)
Sharma, Manish, 100 North Whisman Road, Apt 2821, Mountain View, California 94043, (US)

LEGAL REPRESENTATIVE:

Tollett, Ian et al (86292), Williams Powell Morley House 26-30 Holborn Viaduct, London EC1A 2BP, (GB)

PATENT (CC, No, Kind, Date): EP 1300853 A1 030409 (Basic)
EP 1300853 B1 050413

APPLICATION (CC, No, Date): EP 2002256879 021003;

PRIORITY (CC, No, Date): US 971347 011004

DESIGNATED STATES: DE; FR; GB

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS (V7): G11C-011/16

ABSTRACT WORD COUNT: 29

NOTE:

Figure number on first page: 3

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200315	319
CLAIMS B	(English)	200515	233
CLAIMS B	(German)	200515	239
CLAIMS B	(French)	200515	292
SPEC A	(English)	200315	4143
SPEC B	(English)	200515	4193
Total word count - document A			4463
Total word count - document B			4957
Total word count - documents A + B			9420

...SPECIFICATION layer magnetization vectors are at the same angle (e.g., $(\theta_0) = (\theta_1) = +20$ **degrees**) relative to x- **axis**. The pinned layer magnetization vector M0 is fixed at an angle; the sense layer magnetization vector (M1) could be substantially parallel or **anti - parallel** with the **pinned layer** magnetization vector (M0) as shown in Figure 6b. The FM coupling field and the AF...

...field is pushing the sense layer magnetization vector (M1) further away from the horizontal x- **axis**; thus the torque **angle** is larger for greater magnitude -Hy, and the sense layer magnetization vector (M1) is more...

...SPECIFICATION layer magnetization vectors are at the same angle (e.g., $(\theta_0) = (\theta_1) = +20$ **degrees**) relative to x- **axis**. The pinned layer magnetization vector M0 is fixed at an angle; the sense layer magnetization vector (M1) could be substantially parallel or **anti - parallel** with the **pinned layer** magnetization vector (M0) as shown in Figure 6b. The FM coupling field and the AF...

...field is pushing the sense layer magnetization vector (M1) further away from the horizontal x- **axis**; thus the torque **angle** is larger for greater magnitude -Hy, and the sense layer magnetization vector (M1) is

more...

17/3,K/3 (Item 3 from file: 348)
DIALOG(R) File 348:EUROPEAN PATENTS
(c) 2006 European Patent Office. All rts. reserv.

01011062

Ion beam sputtering system
Ionenstrahl-Sputtering-System
Systeme de pulverisation par faisceau ionique
PATENT ASSIGNEE:

International Business Machines Corporation, (200128), New Orchard Road,
Armonk, NY 10504, (US), (Proprietor designated states: all)

INVENTOR:

Pinarbasi, Mustafa, 483 Via Sorrento, Morgan Hill, California 95037, (US)

LEGAL REPRESENTATIVE:

Burt, Roger James, Dr. et al (52152), IBM United Kingdom Limited
Intellectual Property Department Hursley Park, Winchester Hampshire
SO21 2JN, (GB)

PATENT (CC, No, Kind, Date): EP 908532 A2 990414 (Basic)
EP 908532 A3 991117
EP 908532 B1 030402

APPLICATION (CC, No, Date): EP 98307422 980914;

PRIORITY (CC, No, Date): US 949064 971010

DESIGNATED STATES: DE; FR; GB

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS (V7): C23C-014/46; C23C-014/04

ABSTRACT WORD COUNT: 58

NOTE:

Figure number on first page: 5

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	199915	465
CLAIMS B	(English)	200314	696
CLAIMS B	(German)	200314	656
CLAIMS B	(French)	200314	896
SPEC A	(English)	199915	4610
SPEC B	(English)	200314	4669
Total word count - document A			5076
Total word count - document B			6917
Total word count - documents A + B			11993

...SPECIFICATION and free MR layer, the Co interface layer, the Cu spacer layer and the Ru **layer** if the **pinned layer** is an **AP - pinned layer** . The free MR **layer** material is deposited using the same target as for the ferromagnetic layers of the pinned...

...sensors. For the computer controlled ion beam sputtering system described above, the X-axis, Y- **axis** , Z- **axis** , rotational **angle** (phi) and the swing angle (THETA) settings may be used for each material deposition are...

...SPECIFICATION and free MR layer, the Co interface layer, the Cu spacer layer and the Ru **layer** if the **pinned layer** is an **AP - pinned layer** . The free MR **layer** material is deposited using the same target as for the ferromagnetic layers of the pinned...

...sensors. For the computer controlled ion beam sputtering system

described above, the X-axis, Y- **axis** , Z- **axis** , rotational **angle** (phi) and the swing angle (THETA) settings may be used for each material deposition are...

20/3,K/1 (Item 1 from file: 348)
DIALOG(R) File 348:EUROPEAN PATENTS
(c) 2006 European Patent Office. All rts. reserv.

01993069

Magnetic spin valve sensor having an exchange stabilization layer recessed from the active track edge

Magnetischer Spinventilsensor dessen Austauschstabilisierungsschicht gegenüber der Kante der aktiven Spur vertieft ist

Capteur magnetique a vanne de spin dont la couche de stabilisation par echange est reculee par rapport de la lisiere de la piste active

PATENT ASSIGNEE:

Hitachi Global Storage Technologies Netherlands B.V., (4531893),
Locatellikade 1, P.O. Box 75215, 1070 AE Amsterdam, (NL), (Applicant
designated States: all)

INVENTOR:

Gill, Hardayal Singh, 545 Lytton Avenue, Palo Alto 95193 California,
(US)

LEGAL REPRESENTATIVE:

Calderbank, Thomas Roger et al (50121), MEWBURN ELLIS York House 23
Kingsway, London WC2B 6HP, (GB)

PATENT (CC, No, Kind, Date): EP 1605441 A2 051214 (Basic)
EP 1605441 A3 060315

APPLICATION (CC, No, Date): EP 2005015851 031009;

PRIORITY (CC, No, Date): US 306484 021126

DESIGNATED STATES: AT; BE; BG; CH; CY; CZ; DE; DK; EE; ES; FI; FR; GB; GR;
HU; IE; IT; LI; LU; MC; NL; PT; RO; SE; SI; SK; TR

EXTENDED DESIGNATED STATES: AL; LT; LV; MK

RELATED PARENT NUMBER(S) - PN (AN):

EP 1424687 (EP 2003256365)

INTERNATIONAL PATENT CLASS (V7): G11B-005/39

INTERNATIONAL CLASSIFICATION (V8 + ATTRIBUTES):

IPC + Level Value Position Status Version Action Source Office:

G11B-0005/39 A I F B 20060101 20051026 H EP

ABSTRACT WORD COUNT: 56

NOTE:

Figure number on first page: 4

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200550	141
SPEC A	(English)	200550	2592
Total word count - document A			2733
Total word count - document B			0
Total word count - documents A + B			2733

INVENTOR:

Gill, Hardayal Singh ...

INTERNATIONAL PATENT CLASS (V7): G11B-005/39

INTERNATIONAL CLASSIFICATION (V8 + ATTRIBUTES):

IPC + Level Value Position Status Version Action Source Office:

G11B-0005/39 A I F B 20060101 20051026 H EP

...SPECIFICATION layer, suitably of ruthenium, which promotes antiparallel coupling between the two ferromagnetic layers. The pinned layer 402 may be self - pinned ; or alternatively, the pinned layer 402 may be exchange coupled with an adjacent antiferromagnetic layer (not shown). A conductive nonmagnetic...

20/3,K/2 (Item 2 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
(c) 2006 European Patent Office. All rts. reserv.

01168236

**DISK DRIVE WITH THERMAL ASPERITY REDUCTION CIRCUITRY USING A MAGNETIC
TUNNEL JUNCTION SENSOR**

**PLATTENANTRIEB MIT AUFHEBUNGSSCHALTUNG FUR THERMISCHE UNEBENHEITEN ,EINEN
MAGNETISCHEN TUNNELGRENZSENSOR GEBRAUCHEND**

**LECTEUR DE DISQUE A CIRCUITS DE REDUCTION DE L'ASPERITE THERMIQUE UTILISANT
UN DETECTEUR DE JONCTION MAGNETIQUE A EFFET TUNNEL**

PATENT ASSIGNEE:

Hitachi Global Storage Technologies Netherlands B.V., (4531891),
Locatellikade 1, Parnassustoren, 1076 AZ Amsterdam, (NL), (Proprietor
designated states: all)

INVENTOR:

GILL, Hardayal, Singh , 10 Grove Drive, Portola Valley, CA 94028, (US)

LEGAL REPRESENTATIVE:

Calderbank, Thomas Roger (50122), Mewburn Ellis LLP York House 23
Kingsway, London WC2B 6HP, (GB)

PATENT (CC, No, Kind, Date): EP 1135696 A1 010926 (Basic)

EP 1135696 B1 040811

EP 1135696 B1 040811

WO 2000028342 000518

APPLICATION (CC, No, Date): EP 99954109 991101; WO 99GB3594 991101

PRIORITY (CC, No, Date): US 189321 981109

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;
LU; MC; NL; PT; SE

INTERNATIONAL PATENT CLASS (V7): G01R-033/09; **G11B-005/39** ; **G11B-005/09** ;

G11B-005/012

NOTE:

No A-document published by EPO

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS B	(English)	200433	871
CLAIMS B	(German)	200433	763
CLAIMS B	(French)	200433	913
SPEC B	(English)	200433	7487
Total word count - document A			0
Total word count - document B			10034
Total word count - documents A + B			10034

INVENTOR:

GILL, Hardayal, Singh ...

...INTERNATIONAL PATENT CLASS (V7): **G11B-005/39** ...

... **G11B-005/09** ...

... **G11B-005/012**

...SPECIFICATION a first MTJ stack 1002 formed in the central region 662
having a laminated antiparallel (**AP**) **pinned layer** 1013. The
laminated **AP - pinned layer** 1013 comprises a first ferromagnetic
sublayer (FM1) 1018 of Ni-Fe having a thickness in...

...of the MTJ sensor 1000 of the alternative embodiment of the invention
using the laminated **AP - pinned layer** 1013 is that the initialization
process needed to fix the magnetization directions of the pinned...

...CLAIMS as claimed in any one of claim 1 to claim 9, wherein:
 said ferromagnetic pinned **layer** (1013) is a laminated antiparallel (**AP**) **pinned layer** , said **AP - pinned layer** comprising a first ferromagnetic sublayer (FM1) (1018), a second ferromagnetic sublayer (FM2) (1014) and an...
 ...CLAIMS Magnetischer Tunnelbarrieresensor (MTJ) (1000) nach einem der Ansprüche 1 bis 9, worin:
 die ferromagnetische Pinned- **Layer** -Schicht (1013) eine laminierte antiparallele (**AP**) **Pinned - Layer** -Schicht ist, wobei die **AP - Pinned - Layer** -Schicht eine erste ferromagnetische Unterschicht (FM1) (1018), eine zweite ferromagnetische Unterschicht (FM2) (1014) und eine...

20/3,K/3 (Item 3 from file: 348)
 DIALOG(R)File 348:EUROPEAN PATENTS
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00360572

Compensated magneto-resistive read head.
Kompensierter Magneto-Widerstandslesekopf.
Tete de lecture magneto-resistive compensee.

PATENT ASSIGNEE:

Hewlett-Packard Company, (206033), 3000 Hanover Street, Palo Alto
 California 94304, (US), (applicant designated states: DE;FR;GB)

INVENTOR:

Gill, Hardayal S. , 321 Cuesta Dr., Los Altos California 94022, (US)
 Bhattacharyya, Manoj K., 20610 Cleo Ave., Cupertino California 95014,
 (US)

Davidson, Robert J., 1156 Stilwell Drive, Eagle Idaho 83616, (US)

LEGAL REPRESENTATIVE:

Colgan, Stephen James et al (29461), CARPMAELS & RANSFORD 43 Bloomsbury
 Square, London WC1A 2RA, (GB)

PATENT (CC, No, Kind, Date): EP 325365 A2 890726 (Basic)
 EP 325365 A3 910508

APPLICATION (CC, No, Date): EP 89300242 890112;

PRIORITY (CC, No, Date): US 145784 880119

DESIGNATED STATES: DE; FR; GB

INTERNATIONAL PATENT CLASS (V7): **G11B-005/39 ; G11B-019/04 ; G11B-005/09 ; G11B-005/33 ;**

ABSTRACT WORD COUNT: 146

LANGUAGE (Publication,Procedural,Application): English; English; English
 FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	EPABF1	406
SPEC A	(English)	EPABF1	3816
Total word count - document A			4222
Total word count - document B			0
Total word count - documents A + B			4222

INVENTOR:

Gill, Hardayal S ...

INTERNATIONAL PATENT CLASS (V7): **G11B-005/39** ...

... **G11B-019/04** ...

... **G11B-005/09** ...

... **G11B-005/33**

...SPECIFICATION scheme. While in the foregoing schemes the magnetic moment is rotated relative to the easy **axis** , in a **canted** current or "barber pole" biasing scheme, slanted conductor sensors force current to flow obliquely to...

20/3,K/4 (Item 1 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00995881 **Image available**

CORROSION RESISTIVE GMR AND MTJ SENSORS
CAPTEURS GMR ET MTJ RESISTANTS A LA CORROSION

Patent Applicant/Assignee:

INTERNATIONAL BUSINESS MACHINES CORPORATION, New Orchard Road, Armonk, NY
10504, US, US (Residence), US (Nationality)
IBM UNITED KINGDOM LIMITED, PO Box 41, North Harbour, Portsmouth,
Hampshire PO6 3AU, GB, GB (Residence), GB (Nationality), (Designated
only for: MG)

Inventor(s):

GILL Hardayal Singh , 1380 Creek Drive, 305, Palo Alto, CA 94304, US,

Legal Representative:

FOURNIER Kevin John (agent), IBM United Kingdom Limited, Intellectual
Property Law, Hursley Park, Winchester, Hampshire SO21 2JN, GB,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200325906 A1 20030327 (WO 0325906)
Application: WO 2002GB3989 20020902 (PCT/WO GB0203989)
Priority Application: US 2001954847 20010917

Designated States:

(Protection type is "patent" unless otherwise stated - for applications
prior to 2004)

AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ
EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR
LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI
SK SL TJ TM TN TR TT TZ UA UG UZ VC VN YU ZA ZM ZW
(EP) AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LU MC NL PT SE SK TR
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZM ZW
(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 9102

Inventor(s):

GILL Hardayal Singh ...

Main International Patent Class (v7): **G11B-005/39**

Fulltext Availability:

Detailed Description
Claims

English Abstract

...having magnetic layers with improved corrosion resistive properties.
The SV and MTJ sensors include antiparallel (**AP**)- **pinned layers**
formed of Co-Fe-X, where X is niobium (Nb), hafnium (Hf) or a mixture...

Detailed Description

... The AP-pinned valve sensor differs from the simple spin valve
sensor in that an **AP - pinned** structure has multiple thin film **layers**
instead of a single **pinned layer** . The **AP - pinned** structure has an

antiparallel coupling (APC) layer sandwiched between first and second ferromagnetic pinned layers...a second direction that is antiparallel to the direction of the magnetization of the first pinned layer .

The AP - pinned structure is preferred over the single pinned layer because the magnetizations of the first and second pinned layers of the

AP - inned structure subtractively combine to provide a net magnetization that is less than the magnetization...pinning magnetization, this increases exchange coupling between the first pinned layer and the antiferromagnetic pinning layer . The AP - pinned spin

valve sensor is described in commonly assigned U.S. Patent No. 5,465,185 ...present invention, there

are disclosed several embodiments of GMR and MTJ sensors including an antiparallel (AP)- pinned layer structure and a laminated free layer

structure. The AP - pinned layer comprises a first ferromagnetic (FM1)

layer, a second ferromagnetic layer (FM2) layer and an antiparallel...at which the desired exchange

properties are achieved, typically 100-500 Å. A laminated antiparallel (AP)- pinned layer 612 is formed on the AFM layer 610. The AP - pinned layer

612 comprises a first ferromagnetic layer (FMI) 614, a second ferromagnetic layer (FM2) 618 and...622

including a first sublayer 624 and a second sublayer 626 is separated from

the AP - pinned layer 612 by a nonmagnetic electrically conducting spacer

layer 620. The magnetization of the free layer...thickness of about 150 Å is deposited on the third sublayer 607 of the seed layer 609.

The AP - pinned layer 612, the spacer layer 620, the laminated free layer 622 and the laminated cap layer 628 are sequentially deposited... cooled while

still in the magnetic field to set the exchange coupling of the AFM layer 610 with the laminated AP - pinned layer 612 transverse to the ABS. The FM1

layer 614 has a surface which interfaces with...which the desired exchange properties are achieved, typically 100-500 Å. A laminated first antiparallel (AP)- pinned layer 712 is formed on the AFM

layer 710. The first AP - pinned layer 712 ...724, a second sublayer 726 and a third sublayer 728 is separated from the first

AP - pinned layer 712 by a nonmagnetic electrically conducting first spacer layer 720. The magnetization ...of the laminated first, second and

third sublayers 724, 726 and 728. A laminated second AP - pinned layer 731

is separated from the laminated free layer 722 by a second spacer layer

730 formed on the third sublayer 728. The second AP - pinned layer 731

comprises a third ferromagnetic layer (FM3) 732, a fourth ferromagnetic layer (FM4) 736 and...Co-Fe-X having a thickness of about 20 Å is deposited on the APC layer 716.

The first AP - pinned layer 712, the first spacer layer 720, the

laminated free layer 722, the second spacer **layer** 730, the second **AP - pinned layer** 731, the AFM2 **layer** 738 and the cap layer 740 are sequentially deposited on the AFM1 layer 710 in ...of the AFM1 and AFM2 layers 710 and 738 with the laminated first and second **AP - pinned layers** 712 and 738 transverse to the ABS. The FM1 layer 714 has a surface

which...or a ceramic substance, such as alumina (Al2O3)

The first electrode stack 803 comprises an **AP - pinned layer** 812, an AFM **layer** 810 and a seed layer 808. The seed layer 808 is a nonmagnetic metal layer...grain size

of the subsequent layers. The AFM layer 810 is exchange coupled to the **AP - pinned layer** 812 providing an exchange field to pin the magnetization

direction of the **AP - pinned layer** 812 perpendicular to the ABS. The **AP - pinned layer** 812 comprises a first ferromagnetic (FM1) layer 814 adjacent to the AFM layer 810, a...5000-10000 Å is deposited on the substrate 801.

The seed layer 808, the AFM **layer** 810 and the **AP - pinned** 812 are sequentially deposited over the first shield 807 in the presence of a longitudinal...cooled while still in the magnetic field to set the exchange coupling of the AFM **layer** 810 with the laminated **AP - pinned layer** 812 transverse to the ABS. The FM1 layer 814 has a surface which interfaces with...coupling across the APC layer 816.

Co-Fe-X is used to form the ferromagnetic **AP - pinned layers** and the use of Ni-Fe-Y and Co-Fe-X is used to form...

Claim

1 A magnetoresistive sensor structure comprising:
an antiparallel (**AP**)-**pinned layer** comprising:
a first ferromagnetic (FM1) layer made of (Co-Fe)_x, wherein x is chosen...comprising:
a first antiferromagnetic (AFM1) layer;
said second SV structure comprising:
a second antiferromagnetic (AFM2) **layer** ;
an antiparallel (**AP**)-**pinned layer** , comprising:
a ferromagnetic **layer** (FM4) adjacent to said AFM2 layer;
a ferromagnetic (FM3) layer;
an antiparallel coupling layer disposed...

20/3,K/5 (Item 2 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00971472 **Image available**

SPIN VALVE SENSOR WITH A METAL AND METAL OXIDE CAP LAYER STRUCTURE
CAPTEUR DE VANNE DE SPIN COMPRENANT UN METAL AINSI QU'UNE STRUCTURE DE COUCHES D'ENCAPSULATION D'OXYDE METALLIQUE

Patent Applicant/Assignee:

INTERNATIONAL BUSINESS MACHINES CORPORATION, New Orchard Road, Armonk, NY 10504, US, US (Residence), US (Nationality)

IBM UNITED KINGDOM LIMITED, PO Box 41, North Harbour, Portsmouth, Hampshire PO6 3AU, GB, GB (Residence), GB (Nationality), (Designated only for: MG)

Inventor(s):

GILL Hardayal Singh , 1380 Oak Creek Drive, #305, Palo Alto, CA 94304,

US,
Legal Representative:
FOURNIER Kevin John (agent), IBM United Kingdom Limited, Intellectual
Property Law, Hursley Park, Winchester, Hampshire SO21 2JN, GB,
Patent and Priority Information (Country, Number, Date):
Patent: WO 200301513 A1 20030103 (WO 0301513)
Application: WO 2002GB506 20020205 (PCT/WO GB0200506)
Priority Application: US 2001886832 20010620

Designated States:

(Protection type is "patent" unless otherwise stated - for applications
prior to 2004)

AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ
EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR
LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI
SK SL TJ TM TN TR TT TZ UA UG UZ VN YU ZA ZM ZW
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZM ZW
(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 3013

Inventor(s):

GILL Hardayal Singh ...

Main International Patent Class (v7): **G11B-005/39**

International Patent Class (v7): **G11B-005/48 ...**

... G11B-005/012

Fulltext Availability:

Detailed Description

Claims

Detailed Description

... spin valve sensor includes a spacer layer (S) 200 which is
located between an antiparallel (AP) **pinned layer** structure 202
and a free
layer structure 204. The pinned layer structure 202 includes an
antiparallel coupling (APC) layer 206 which is located between first and
second antiparallel (AP) **pinned layers** (AP1) and (AP2) 208 and 210.
The
first **AP pinned layer** 208 interfaces and is exchange coupled to an
antiferromagnetic (AFM) pinning layer 212 which pins a magnetic moment
214
of the first **AP pinned layer** perpendicular to the ABS in a
direction out
of the sensor or into the sensor, as shown in Fig. 10. By a strong
antiparallel coupling between the first and second **AP pinned layers**
208
and 210 the second **AP pinned layer** has a magnetic moment 21G which
is
antiparallel to the magnetic moment 214. A seed...of platinum manganese
for the
pinning layer 212, 15A of cobalt iron for the first **AP pinned layer**
208,
8A of ruthenium for the antiparallel coupling layer 206, 20A of cobalt
iron for the second **AP pinned layer** 210, 23A of copper for the
spacer
layer 200, 15A of cobalt iron for the reflector layer 228 and 30A of
aluminum oxide for the cap **layer** 230.

While the **AP pinned layer** structure 202 is preferred, it should be understood that a simple pinned layer structure, whether...

Claim

... NiFe).

5 A magnetic read head as claimed in any preceding claim wherein the pinned **layer** structure is an antiparallel (**AP**) **pinned layer** structure that includes:
ferromagnetic first and second antiparallel (**AP**) **pinned layers** with the first **AP pinned layer** interfacing the pinning **layer** and the second **AP pinned layer** interfacing the spacer **layer** ; and
an antiparallel (AP) coupling layer located between and interfacing the first and second **AP pinned layers** .

6 A magnetic head assembly having a read head

20/3,K/6 (Item 3 from file: 349)

DIALOG(R)File 349:PCT FULLTEXT

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00564969 **Image available**

DISK DRIVE WITH THERMAL ASPERITY REDUCTION CIRCUITRY USING A MAGNETIC TUNNEL JUNCTION SENSOR

LECTEUR DE DISQUE A CIRCUITS DE REDUCTION DE L'ASPERITE THERMIQUE UTILISANT UN DETECTEUR DE JONCTION MAGNETIQUE A EFFET TUNNEL

Patent Applicant/Assignee:

INTERNATIONAL BUSINESS MACHINES CORPORATION,
IBM UNITED KINGDOM LIMITED,

Inventor(s):

GILL Hardayal Singh ,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200028342 A1 20000518 (WO 0028342)

Application: WO 99GB3594 19991101 (PCT/WO GB9903594)

Priority Application: US 98189321 19981109

Designated States:

(Protection type is "patent" unless otherwise stated - for applications prior to 2004)

AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB
GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD
MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ
VN YU ZA ZW GH GM KE LS MW SD SL SZ TZ UG ZW AM AZ BY KG KZ MD RU TJ TM
AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE BF BJ CF CG CI CM
GA GN GW ML MR NE SN TD TG

Publication Language: English

Fulltext Word Count: 9850

Inventor(s):

GILL Hardayal Singh ...

International Patent Class (v7): **G11B-005/39 ...**

... G11B-005/09 ...

... G11B-005/012

Fulltext Availability:

Detailed Description

Claims

Detailed Description

... a first MTJ stack 1002 formed in the central region 662 having a laminated antiparallel (AP) pinned layer 1013. The laminated AP - pinned layer 1013 comprises a first ferromagnetic sublayer WMI) 1018 of Ni-Fe having a thickness in...

...of the MTJ sensor 1000 of the alternative embodiment of the invention using the laminated AP - pinned layer 1013 is that the initialization process needed to fix the magnetization directions of the pinned...

Claim

... junction (MTJ) sensor, comprising:
a first MTJ (MTJ1) stack, said MTJ1 stack having:
ferromagnetic free layer ;
laminated antiparallel (AP) pinned layer , said AP
pinned layer comprising a first-ferromagnetic sublayer (FM1), a
second
ferromagnetic sublayer (FM2) and an antiparallel coupling...MTJ sensor
comprising:
a first MTJ (MTJ1) stack, said MTJ1 stack having:
a ferromagnetic free layer ;
a laminated antiparallel (AP) pinned layer , said
AP - pinned layer comprising a first ferromagnetic sublayer (FM1), a
second

21/3,K/1 (Item 1 from file: 348)
DIALOG(R) File 348:EUROPEAN PATENTS
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01993069

Magnetic spin valve sensor having an exchange stabilization layer recessed from the active track edge

Magnetischer Spinventilsensor dessen Austauschstabilisierungsschicht gegenüber der Kante der aktiven Spur vertieft ist

Capteur magnetique a vanne de spin dont la couche de stabilisation par echange est reculee par rapport de la lisiere de la piste active

PATENT ASSIGNEE:

Hitachi Global Storage Technologies Netherlands B.V., (4531893),
Locatellikade 1, P.O. Box 75215, 1070 AE Amsterdam, (NL), (Applicant designated States: all)

INVENTOR:

Gill, Hardayal Singh , 545 Lytton Avenue, Palo Alto 95193 California, (US)

LEGAL REPRESENTATIVE:

Calderbank, Thomas Roger et al (50121), MEWBURN ELLIS York House 23
Kingsway, London WC2B 6HP, (GB)

PATENT (CC, No, Kind, Date): EP 1605441 A2 051214 (Basic)
EP 1605441 A3 060315

APPLICATION (CC, No, Date): EP 2005015851 031009;

PRIORITY (CC, No, Date): US 306484 021126

DESIGNATED STATES: AT; BE; BG; CH; CY; CZ; DE; DK; EE; ES; FI; FR; GB; GR; HU; IE; IT; LI; LU; MC; NL; PT; RO; SE; SI; SK; TR

EXTENDED DESIGNATED STATES: AL; LT; LV; MK

RELATED PARENT NUMBER(S) - PN (AN):

EP 1424687 (EP 2003256365)

INTERNATIONAL PATENT CLASS (V7): G11B-005/39

INTERNATIONAL CLASSIFICATION (V8 + ATTRIBUTES):

IPC + Level Value Position Status Version Action Source Office:

G11B-0005/39 A I F B 20060101 20051026 H EP

ABSTRACT WORD COUNT: 56

NOTE:

Figure number on first page: 4

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
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CLAIMS A	(English)	200550	141
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SPEC A	(English)	200550	2592
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Total word count - document A	2733
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Total word count - document B	0
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Total word count - documents A + B	2733
------------------------------------	------

INVENTOR:

Gill, Hardayal Singh ...

INTERNATIONAL PATENT CLASS (V7): G11B-005/39

INTERNATIONAL CLASSIFICATION (V8 + ATTRIBUTES):

IPC + Level Value Position Status Version Action Source Office:

G11B-0005/39 A I F B 20060101 20051026 H EP

...SPECIFICATION layer, suitably of ruthenium, which promotes antiparallel coupling between the two ferromagnetic layers. The pinned layer 402 may be self - pinned ; or alternatively, the pinned layer 402 may be exchange coupled with an adjacent antiferromagnetic layer (not shown). A conductive nonmagnetic...

21/3,K/2 (Item 2 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
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01675190

Flux guide in the bearing surface of a magnetoresistive head
Flussleiter in der Lauffläche eines Magnetowiderstandkopfes
Guide de flux dans la surface portante d'une tête magnétoresistive
PATENT ASSIGNEE:

QUANTUM CORPORATION, (567673), 501 Sycamore Drive, Milpitas, CA 95035,
(US), (Applicant designated States: all)

INVENTOR:

Wu, Andrew L., 15 High Street, Shrewsbury, Massachusetts 01545, (US)

LEGAL REPRESENTATIVE:

Charig, Raymond Julian et al (79692), Eric Potter Clarkson, Park View
House, 58 The Ropewalk, Nottingham NG1 5DD, (GB)

PATENT (CC, No, Kind, Date): EP 1376543 A2 040102 (Basic)
EP 1376543 A3 050817

APPLICATION (CC, No, Date): EP 2003253992 030625;

PRIORITY (CC, No, Date): US 183329 020625

DESIGNATED STATES: AT; BE; BG; CH; CY; CZ; DE; DK; EE; ES; FI; FR; GB; GR;
HU; IE; IT; LI; LU; MC; NL; PT; RO; SE; SI; SK; TR

EXTENDED DESIGNATED STATES: AL; LT; LV; MK

INTERNATIONAL PATENT CLASS (V7): G11B-005/39; G11B-005/31; H01L-043/00;
H01F-010/32

ABSTRACT WORD COUNT: 39

NOTE:

Figure number on first page: 2

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200401	307
SPEC A	(English)	200401	3365
Total word count - document A			3672
Total word count - document B			0
Total word count - documents A + B			3672

...SPECIFICATION relates generally to data storage systems and, more specifically, to data storage systems having read **heads** which employ **magnetoresistive** sensors.

As **storage** density increases, the **magnetic** field being sensed during read by a **magnetoresistive** sensor in a read head of a data storage system becomes smaller. Thus, there is...

...Optionally, and as shown, the pinned layer 95 can be implemented as a "synthetic antiferromagnetic" (**SAF**) **pinned layer** , which includes two opposed pinned layers of CoFe, shown as pinned layer 104 and reference...

21/3,K/3 (Item 3 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
(c) 2006 European Patent Office. All rts. reserv.

01288388

Seat belt buckle for use with a pretensioner
Sicherheitsgurt mit Schlossstrammer
Boucle pour ceinture de securite utilisee avec un pretendeur
PATENT ASSIGNEE:

KEY SAFETY SYSTEMS, INC., (4687820), 7000 Nineteen Mile Road, Sterling Heights, Michigan 48314, (US), (Proprietor designated states: all)

INVENTOR:

Kohlndorfer, Kenneth.H, 28720 Kaufman, Roseville, Michigan 48066, (US)

Petersen, Carl.M, 3657 Saginaw Trail, Waterford, Michigan 48329, (CA)

Gill, Harjeet , 11115 Shadow Creek, Sterling Heights, Michigan 48314, (US)

Longley, Rosemary, 20680 Fleetwood, Harper Woods, Michigan 48225, (US)

Korona, Tammy, 40240 Moravian Clinton Township, Macomb County Michigan 48036, (US)

Foley, Caryn, 30137 Garry, Madison Heights, Michigan 48071, (US)

Good, Craig, 1693 Clemens Circle, Rochester Hills, Michigan 48037, (US)

He, Simon.X, 1675 Kirts Boulevard, Apt 202, Troy, Michigan 48084, (CA)

Jain, Tony, 3754 Cherrywood Court, Rochester Hills, Michigan 480309, (US)

Refior, Lawrence. M, 8811 S.Dutchess Romeo, Michigan 48065, (US)

Richards, Susan.A, 5330 Windham, Sterling Heights, Michigan 48310, (US)

LEGAL REPRESENTATIVE:

Muller-Bore & Partner Patentanwalte (100651), Grafinger Strasse 2, 81671 Munchen, (DE)

PATENT (CC, No, Kind, Date): EP 1106095 A2 010613 (Basic)

EP 1106095 A3 020320

EP 1106095 B1 050119

APPLICATION (CC, No, Date): EP 2000124206 001108;

PRIORITY (CC, No, Date): US 455976 991206

DESIGNATED STATES: DE; ES; FR; GB; IT

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS (V7): A44B-011/25

ABSTRACT WORD COUNT: 177

NOTE:

Figure number on first page: 2

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200124	239
CLAIMS B	(English)	200503	346
CLAIMS B	(German)	200503	366
CLAIMS B	(French)	200503	425
SPEC A	(English)	200124	5616
SPEC B	(English)	200503	5835
Total word count - document A			5856
Total word count - document B			6972
Total word count - documents A + B			12828

INVENTOR:

... CA)

Gill, Harjeet ...

...SPECIFICATION latch plate) or another similarly functioning shape. If the latch plate 180 is rotated 180(**degree**) about a vertical **axis** it would not be possible to install it within the slot as the projection 185 ...

...SPECIFICATION latch plate) or another similarly functioning shape. If the latch plate 180 is rotated 180(**degree**) about a vertical **axis** it would not be possible to install it within the slot as the projection 185 ...

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01011062

Ion beam sputtering system

Ionenstrahl-Sputtering-System

Système de pulverisation par faisceau ionique

PATENT ASSIGNEE:

International Business Machines Corporation, (200128), New Orchard Road,
Armonk, NY 10504, (US), (Proprietor designated states: all)

INVENTOR:

Pinarbasi, Mustafa, 483 Via Sorrento, Morgan Hill, California 95037, (US)

LEGAL REPRESENTATIVE:

Burt, Roger James, Dr. et al (52152), IBM United Kingdom Limited
Intellectual Property Department Hursley Park, Winchester Hampshire
SO21 2JN, (GB)

PATENT (CC, No, Kind, Date): EP 908532 A2 990414 (Basic)
EP 908532 A3 991117
EP 908532 B1 030402

APPLICATION (CC, No, Date): EP 98307422 980914;

PRIORITY (CC, No, Date): US 949064 971010

DESIGNATED STATES: DE; FR; GB

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS (V7): C23C-014/46; C23C-014/04

ABSTRACT WORD COUNT: 58

NOTE:

Figure number on first page: 5

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	199915	465
CLAIMS B	(English)	200314	696
CLAIMS B	(German)	200314	656
CLAIMS B	(French)	200314	896
SPEC A	(English)	199915	4610
SPEC B	(English)	200314	4669
Total word count - document A			5076
Total word count - document B			6917
Total word count - documents A + B			11993

...SPECIFICATION and free MR layer, the Co interface layer, the Cu spacer layer and the Ru **layer** if the **pinned layer** is an **AP - pinned layer** . The free MR **layer** material is deposited using the same target as for the ferromagnetic layers of the pinned...

...sensors. For the computer controlled ion beam sputtering system described above, the X-axis, Y- **axis** , Z- **axis** , rotational **angle** (phi) and the swing angle (THETA) settings may be used for each material deposition are...

...SPECIFICATION and free MR layer, the Co interface layer, the Cu spacer layer and the Ru **layer** if the **pinned layer** is an **AP - pinned layer** . The free MR **layer** material is deposited using the same target as for the ferromagnetic layers of the pinned...

...sensors. For the computer controlled ion beam sputtering system described above, the X-axis, Y- **axis** , Z- **axis** , rotational **angle** (phi) and the swing angle (THETA) settings may be used for each material deposition are...

21/3,K/5 (Item 5 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
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00812859

Magnetoresistive recording head

Magnetoresistiver Aufnahmekopf

Tete d'enregistrement magnetoresistive

PATENT ASSIGNEE:

Hewlett-Packard Company, A Delaware Corporation, (3016020), 3000 Hanover
Street, Palo Alto, CA 94304, (US), (Proprietor designated states: all)

INVENTOR:

Brug, James A., 205 Marmona Drive, Menlo Park, CA 94025, (US)

Bhattacharyya, Manoj K., 1650 Heron Avenue, Sunnyvale, CA 94087, (US)

LEGAL REPRESENTATIVE:

Powell, Stephen David et al (52312), WILLIAMS, POWELL & ASSOCIATES, 4 St
Paul's Churchyard, London EC4M 8AY, (GB)

PATENT (CC, No, Kind, Date): EP 755048 A1 970122 (Basic)
EP 755048 B1 011107

APPLICATION (CC, No, Date): EP 96304676 960625;

PRIORITY (CC, No, Date): US 503679 950718

DESIGNATED STATES: DE; FR; GB

INTERNATIONAL PATENT CLASS (V7): G11B-005/39; G01R-033/09

ABSTRACT WORD COUNT: 267

NOTE:

Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	EPAB97	804
CLAIMS B	(English)	200145	394
CLAIMS B	(German)	200145	429
CLAIMS B	(French)	200145	473
SPEC A	(English)	EPAB97	4141
SPEC B	(English)	200145	4096
Total word count - document A			4946
Total word count - document B			5392
Total word count - documents A + B			10338

...ABSTRACT A magnetoresistive (MR) sensor (100) for use as a read element
in a read/write **head** of a **magnetic storage** device operates on the
giant magnetoresistive effect produced by a **spin valve**. In a
preferred embodiment, the present invention includes a pair of spin
valves (30, 50...

SPECIFICATION The present invention relates generally to recording **heads**
for **magnetic storage** media. More particularly, the recording **head**
of the present invention incorporates **magnetoresistive** elements for
sensing the magnetic fields recorded on the magnetic storage media and
effectively rejects...

...SPECIFICATION B1

The present invention relates generally to recording **heads** for
magnetic storage media. More particularly, the recording **head** of the
present invention incorporates **magnetoresistive** elements for sensing
the magnetic fields recorded on the magnetic storage media and
effectively rejects...

...CLAIMS fixed magnetization (16) parallel to a first axis, a rotatable magnetization (14), and a first **angle** between said first **axis** and the direction of said rotatable magnetization (14) which decreases in the presence of a...

...a fixed magnetization parallel to said first axis, a rotatable magnetization (14'), and a second **angle** between said first **axis** and the direction of said rotatable magnetization (14') which increases in the presence of a...

21/3,K/6 (Item 6 from file: 348)
DIALOG(R) File 348:EUROPEAN PATENTS
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00474963

Multilayer which shows magnetoresistive effect and magnetoresistive element using the same.

Mehrsicht Film mit magnetoresistiven Effekt und magnetoresistives Element.

Film multicouche presentant un effet magneto-resistant et element magneto-resistant utilisant celui-ci.

PATENT ASSIGNEE:

HITACHI, LTD., (204141), 6, Kanda Surugadai 4-chome, Chiyoda-ku, Tokyo 101, (JP), (applicant designated states: DE;FR)

INVENTOR:

Nakatani, Ryoichi, 22-5, Aburadai, Akikawa-shi, Tokyo 197, (JP)

Kitada, Masahiro, 1-8-81, Sakae-cho, Hamura-machi, Nihitama-gun, Tokyo 190-11, (JP)

Hosoe, Yuzuru, 6-45-10, Hirayama, Hino-shi, Tokyo 191, (JP)

LEGAL REPRESENTATIVE:

Patentanwalte Beetz - Timpe - Siegfried Schmitt-Fumian - Mayr (100712), Steinsdorfstrasse 10, D-80538 Munchen, (DE)

PATENT (CC, No, Kind, Date): EP 490327 A1 920617 (Basic)

EP 490327 B1 941228

APPLICATION (CC, No, Date): EP 91121114 911209;

PRIORITY (CC, No, Date): JP 90401027 901210; JP 91110128 910515

DESIGNATED STATES: DE; FR

INTERNATIONAL PATENT CLASS (V7): H01F-010/00;

ABSTRACT WORD COUNT: 51

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS B	(English)	EPBBF2	723
CLAIMS B	(German)	EPBBF2	636
CLAIMS B	(French)	EPBBF2	774
SPEC B	(English)	EPBBF2	13430

Total word count - document A 0

Total word count - document B 15563

Total word count - documents A + B 15563

...SPECIFICATION a multilayer in which ferromagnetic layers and nonferromagnetic layers are layered on each other, the **angle** between the hard **axis** direction of the multilayer film and the direction of detecting an outer magnetic field in...shows magnetoresistive effect and which is provided with excellent high-frequency property, by setting the **angle** between the easy **axis** direction of a ferromagnetic layer with a relatively high coercive force and the easy axis...
...shows magnetoresistive effect and has excellent high-frequency property can be obtained, by setting the **angle** between the easy **axis** direction

of a ferromagnetic layer with a relatively high coercive force and the easy axis...

...layer of nonferromagnetic layers is preferably 1.5 to 2.5 nm. By setting the **angle** between the easy **axis** direction of the multilayer film and the direction of detecting an outer magnetic field in...a layer with a relatively high coercive force preferably make almost right angle. If the **angle** between the easy **axis** directions of the two layers is then 75 to 90 (degree), substantially the same results...because hard axis direction has a higher permeability than easy axis direction. The difference in **angle** between the hard **axis** direction of multilayer film and the direction of detecting a magnetic field is preferably 10...higher specific magnetic permeability than the easy axis direction of the multilayer. The difference in **angle** between the hard **axis** direction of the multilayer and the direction for detecting a magnetic field is preferably 10...regeneration are formed at different places on an identical single substrate.

By applying the magnetic **head** to a **magnetic storage** apparatus, a highly potential **magnetic storage** apparatus can be obtained as well.
Example 21

Using the **magnetoresistive** element of the present invention, a magnetic head was prepared. The structure of the magnetic...can be used as a magnetic field sensor without any bias field. By setting the **angle** between the easy **axis** direction of the multilayer film in the state where a bias field is not applied...

...angle, a magnetoresistive element excellent in high-frequency property can be obtained. By setting the **angle** between the easy **axis** direction of the multilayer film in the state where a bias field is not applied...

...CLAIMS 5. The magnetoresistive element as claimed in any of claims 1 to 4, wherein the **angle** between the hard **axis** direction of the multilayer film and the direction for detecting an outer magnetic field in...

...of claims 6 to 14, characterized by having two types of ferromagnetic layers, wherein the **angle** between the easy **axis** directions of said two types of ferromagnetic layers is 75 to 90(degree).

16. The...

21/3,K/7 (Item 7 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
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00360572

Compensated magneto-resistive read head.

Kompensierter Magneto-Widerstandsleskopf.

Tete de lecture magneto-resistive compensee.

PATENT ASSIGNEE:

Hewlett-Packard Company, (206033), 3000 Hanover Street, Palo Alto
California 94304, (US), (applicant designated states: DE;FR;GB)

INVENTOR:

Gill, Hardayal S. , 321 Cuesta Dr., Los Altos California 94022, (US)
Bhattacharyya, Manoj K., 20610 Cleo Ave., Cupertino California 95014,
(US)

Davidson, Robert J., 1156 Stilwell Drive, Eagle Idaho 83616, (US)

LEGAL REPRESENTATIVE:

Colgan, Stephen James et al (29461), CARPMAELS & RANSFORD 43 Bloomsbury
Square, London WC1A 2RA, (GB)

PATENT (CC, No, Kind, Date): EP 325365 A2 890726 (Basic)
EP 325365 A3 910508
APPLICATION (CC, No, Date): EP 89300242 890112;
PRIORITY (CC, No, Date): US 145784 880119
DESIGNATED STATES: DE; FR; GB
INTERNATIONAL PATENT CLASS (V7): G11B-005/39 ; G11B-019/04 ; G11B-005/09
; G11B-005/33 ;
ABSTRACT WORD COUNT: 146

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	EPABF1	406
SPEC A	(English)	EPABF1	3816
Total word count - document A			4222
Total word count - document B			0
Total word count - documents A + B			4222

INVENTOR:

Gill, Hardayal S ...

INTERNATIONAL PATENT CLASS (V7): G11B-005/39 ...

... G11B-019/04 ...

... G11B-005/09 ...

... G11B-005/33

...SPECIFICATION scheme. While in the foregoing schemes the magnetic moment is rotated relative to the easy **axis** , in a **canted** current or "barber pole" biasing scheme, slanted conductor sensors force current to flow obliquely to...

21/3,K/8 (Item 1 from file: 349)

DIALOG(R)File 349:PCT FULLTEXT

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01109879 **Image available**

SUPPRESSION OF THERMAL NOISE USING SPIN TRANSFER IN MAGNETORESISTIVE ELEMENTS

SUPPRESSION DU BRUIT THERMIQUE AU MOYEN D'UN TRANSFERT DE SPIN DANS DES ELEMENTS MAGNETORESISTANTS

Patent Applicant/Assignee:

SEAGATE TECHNOLOGY LLC, 920 Disc Drive, Scotts Valley, CA 95066, US, US
(Residence), US (Nationality)

Inventor(s):

COVINGTON Mark W, 6417 Kentucky Avenue, Pittsburgh, PA 15206, US,

Legal Representative:

BORDAS Carol I (agent), Seagate Technology LLC, 1251 Waterfront Place,
Pittsburgh, PA 15222, US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200432157 A1 20040415 (WO 0432157)

Application: WO 2003US29913 20030925 (PCT/WO US03029913)

Priority Application: US 2002414844 20020930

Designated States:

(Protection type is "patent" unless otherwise stated - for applications prior to 2004)

AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ
EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK

LR LS LT LU LV MA MD MG MK MN MW MX MZ NI NO NZ OM PG PH PL PT RO RU SC
SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG UZ VC VN YU ZA ZM ZW
(EP) AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LU MC NL PT RO SE
SI SK TR
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZM ZW
(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English
Filing Language: English
Fulltext Word Count: 6082

Fulltext Availability:
Detailed Description

Detailed Description
... to suppress noise due to thermally activated magnetization
fluctuations.

BACKGROUND OF THE INVENTION

In a **magnetic** data **storage** and retrieval system, a magnetic
recording **head** typically includes a read head having a
magnetoresistive (**MR**) sensor for retrieving magnetically encoded
information stored on a magnetic
disc. Magnetic flux from the...

...and 2. MR stack 60 includes pinned reference layer 62, first spacer
layer 64, free **layer** 66, second spacer **layer** 68, **pinned** synthetic
antiferromagnetic (**SAF**) 70, and pinning **layer** 72. Free layer 66 is
typically made of a soft ferromagnetic material (e.g., CoFe...

...reference layer 62 and free layer 66. Second spacer layer 68 is
positioned between free **layer** 66 and **pinned** **SAF** 70. First
spacer **layer** 64 is typically made of a nonmagnetic metal such as
copper,
Second spacer layer 68...

21/3,K/9 (Item 2 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
(c) 2006 WIPO/Univentio. All rts: reserv.

00971472 **Image available**

SPIN VALVE SENSOR WITH A METAL AND METAL OXIDE CAP LAYER STRUCTURE
CAPTEUR DE VANNE DE SPIN COMPRENANT UN METAL AINSI QU'UNE STRUCTURE DE
COUCHES D'ENCAPSULATION D'OXYDE METALLIQUE

Patent Applicant/Assignee:

INTERNATIONAL BUSINESS MACHINES CORPORATION, New Orchard Road, Armonk, NY
10504, US, US (Residence), US (Nationality)

IBM UNITED KINGDOM LIMITED, PO Box 41, North Harbour, Portsmouth,
Hampshire PO6 3AU, GB, GB (Residence), GB (Nationality), (Designated
only for: MG)

Inventor(s):

GILL Hardayal Singh , 1380 Oak Creek Drive, #305, Palo Alto, CA 94304,
US,

Legal Representative:

FOURNIER Kevin John (agent), IBM United Kingdom Limited, Intellectual
Property Law, Hursley Park, Winchester, Hampshire SO21 2JN, GB,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200301513 A1 20030103 (WO 0301513)

Application: WO 2002GB506 20020205 (PCT/WO GB0200506)

Priority Application: US 2001886832 20010620

Designated States:

(Protection type is "patent" unless otherwise stated - for applications prior to 2004)

AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ
EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR
LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI
SK SL TJ TM TN TR TT TZ UA UG UZ VN YU ZA ZM ZW
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZM ZW
(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 3013

Inventor(s):

GILL Hardayal Singh ...

Main International Patent Class (v7): G11B-005/39

International Patent Class (v7): G11B-005/48 ...

... G11B-005/012

Fulltext Availability:

Detailed Description

Claims

Detailed Description

... spin valve sensor includes a spacer layer (S) 200 which is located between an antiparallel (AP) pinned layer structure 202 and a free layer structure 204. The pinned layer structure 202 includes an antiparallel coupling (APC) layer 206 which is located between first and second antiparallel (AP) pinned layers (AP1) and (AP2) 208 and 210. The first AP pinned layer 208 interfaces and is exchange coupled to an antiferromagnetic (AFM) pinning layer 212 which pins a magnetic moment 214 of the first AP pinned layer perpendicular to the ABS in a direction out of the sensor or into the sensor, as shown in Fig. 10. By a strong antiparallel coupling between the first and second AP pinned layers 208 and 210 the second AP pinned layer has a magnetic moment 216 which is antiparallel to the magnetic moment 214. A seed...of platinum manganese for the pinning layer 212, 15A of cobalt iron for the first AP pinned layer 208, 8A of ruthenium for the antiparallel coupling layer 206, 20A of cobalt iron for the second AP pinned layer 210, 23A of copper for the spacer layer 200, 15A of cobalt iron for the reflector layer 228 and 30A of aluminum oxide for the cap layer 230.

While the AP pinned layer structure 202 is preferred, it should be understood that a simple pinned layer structure, whether...

Claim

... NiFe).

5 A magnetic read head as claimed in any preceding claim wherein the pinned **layer** structure is an antiparallel (**AP**) **pinned layer** structure that includes:
ferromagnetic first and second antiparallel (**AP**) **pinned layers** with the first **AP pinned layer** interfacing the pinning **layer** and the second **AP pinned layer** interfacing the spacer **layer** ; and
an antiparallel (AP) coupling layer located between and interfacing the first and second **AP pinned layers** .

6 A magnetic head assembly having a read head

21/3,K/10 (Item 3 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00173723

THIN FILM MAGNETIC ELEMENT HAVING A RHOMBIC SHAPE
ELEMENT MAGNETIQUE RHOMBIFORME A COUCHE MINCE

Patent Applicant/Assignee:

EASTMAN KODAK COMPANY,

Inventor(s):

SMITH Neil,

Patent and Priority Information (Country, Number, Date):

Patent: WO 9007179 A1 19900628

Application: WO 89US5584 19891214 (PCT/WO US8905584)

Priority Application: US 88178 19881216

Designated States:

(Protection type is "patent" unless otherwise stated - for applications prior to 2004)

AT BE CH DE ES FR GB IT JP LU NL SE

Publication Language: English

Fulltext Word Count: 3119

Fulltext Availability:

Detailed Description

Detailed Description

... thin-,.-magnetic film is usedtin a. variety
of diverse applicaitons, serving, for example, as a
storage element in **magnetic** memories, as a soft
adjacent biasing layer in **magnetoresistive heads** and
as a recording medium in magneto-optic memories. An
PCr/US89/05584
important and...80 rotates the
magnetization 74' so the angle 72' between the
magnetization and the easy **axis** 51 is 90 **degrees** and
the magnetization 741 is in the direction of the hard
axis 7&, Under these...

File 2:INSPEC 1898-2006/Jul W3
(c) 2006 Institution of Electrical Engineers
File 6:NTIS 1964-2006/Jul W3
(c) 2006 NTIS, Intl Cpyrght All Rights Res
File 8:Ei Compendex(R) 1970-2006/Jul W3
(c) 2006 Elsevier Eng. Info. Inc.
File 34:SciSearch(R) Cited Ref Sci 1990-2006/Jul W4
(c) 2006 The Thomson Corp
File 35:Dissertation Abs Online 1861-2006/Jun
(c) 2006 ProQuest Info&Learning
File 56:Computer and Information Systems Abstracts 1966-2006/Jul
(c) 2006 CSA.
File 57:Electronics & Communications Abstracts 1966-2006/Jul
(c) 2006 CSA.
File 65:Inside Conferences 1993-2006/Jul 27
(c) 2006 BLDSC all rts. reserv.
File 94:JICST-EPlus 1985-2006/Apr W4
(c)2006 Japan Science and Tech Corp(JST)
File 95:TEME-Technology & Management 1989-2006/Jul W4
(c) 2006 FIZ TECHNIK
File 99:Wilson Appl. Sci & Tech Abs 1983-2006/Jul
(c) 2006 The HW Wilson Co.
File 144:Pascal 1973-2006/Jul W1
(c) 2006 INIST/CNRS
File 256:TecInfoSource 82-2006/Oct
(c) 2006 Info.Sources Inc
File 583:Gale Group Globalbase(TM) 1986-2002/Dec 13
(c) 2002 The Gale Group
File 603:Newspaper Abstracts 1984-1988
(c)2001 ProQuest Info&Learning
File 483:Newspaper Abs Daily 1986-2006/Jul 26
(c) 2006 ProQuest Info&Learning
File 248:PIRA 1975-2006/Jul W2
(c) 2006 Pira International

Set	Items	Description
S1	56616	MAGNETIC(3N)STORAGE OR HDD OR HARD() (DISC OR DISK) ()DRIVE?? OR HARD()DRIVE??
S2	4602	(HEAD?? OR PICK()UP OR PICKUP OR TRANSDUCER?? OR SLIDER?? - OR READ() SENSOR?? OR WRITER???) (10N)S1
S3	276	(MAGNETORESISTIVE OR MR OR GMR OR (GIANT OR COLOSSAL) () (MA- GNETORESISTIVE OR MAGNETO()RESISTIVE) OR SVMR OR SV OR TJ OR - TMR OR TJMR OR TUNNEL()JUNCTION OR SPIN() VALVE OR SPIN()BULB)- (10N)S2
S4	197	((AP OR ANTI()PARALLEL OR SAF OR SELF) (3N) (PINNED OR FIXED) OR FERRIMAGNETIC?(3N)COUPL??? OR RKKY) (5N) (LAYER?? OR LAMINA- R??)
S5	25435	(AXIS OR AXIS(2N)MAGNET?) (3N) (CANTED OR SLANTED OR INCLINED OR DIAGONAL OR OBLIQUE OR ANGLE?? OR DEGREE??)
S6	39	(ABS OR AIR()BEARING()SURFACE?? OR FACING) (10N)S5
S7	1130	AU=(GILL, H? OR GILL H?)
S8	0	S3(S)S4
S9	0	S3 AND S4
S10	0	S3(S) (S5 OR S6)
S11	0	S3 AND (S5 OR S6)
S12	3	(S1 OR S2) (S) (S5 OR S6)
S13	2	RD (unique items)
S14	4	(S3:S6) AND S7
S15	4	S14 NOT S12
S16	3	RD (unique items)

13/3,K/1 (Item 1 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 2006 Institution of Electrical Engineers. All rts. reserv.

06250384 INSPEC Abstract Number: A9611-7215G-001, B9606-3110M-001

Title: **Steep magnetoresistance change with low saturation fields in Co/Ni multilayer thin films**

Author(s): De-Hua Han

Author Affiliation: Dept. of Electr. Eng., Minnesota Univ., Minneapolis, MN, USA

Journal: Applied Physics Letters vol.68, no.15 p.2153-4

Publisher: AIP,

Publication Date: 8 April 1996 Country of Publication: USA

CODEN: APPLAB ISSN: 0003-6951

SICI: 0003-6951(19960408)68:15L:2153:SMCW;1-P

Material Identity Number: A135-96016

U.S. Copyright Clearance Center Code: 0003-6951/96/68(15)/2152/2/\$10.00

Language: English

Subfile: A B

Copyright 1996, IEE

...Abstract: with a FWHM of 13 Oe was obtained. While for H perpendicular to the easy **axis** and at 45 **degrees** to I, a MR ratio of 19.1% with a FWHM of 34 Oe was...

... a very steep decrease with increasing H. These Co/Ni multilayers are promising candidates for **magnetic storage** and sensor technology.

13/3,K/2 (Item 1 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

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04733003 Genuine Article#: UD974 No. References: 6

Title: **STEEP MAGNETORESISTANCE CHANGE WITH LOW SATURATION FIELDS IN CO/NI MULTILAYER THIN-FILMS**

Author(s): HAN DH

Corporate Source: UNIV MINNESOTA, DEPT ELECT ENGN/MINNEAPOLIS//MN/55455

Journal: APPLIED PHYSICS LETTERS, 1996, V68, N15 (APR 8), P2153-2154

ISSN: 0003-6951

Language: ENGLISH Document Type: ARTICLE (Abstract Available)

...Abstract: with a FWHM of 13 Oe was obtained. While for H perpendicular to the easy **axis** and at 45 **degrees** to I, a MR ratio of 19.1% with a FWHM of 34 Oe was...

...a very steep decrease with increasing H. These Co/Ni multilayers are promising candidates for **magnetic storage** and sensor technology.

(C) 1996 American Institute of Physics.

16/3,K/1 (Item 1 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 2006 Institution of Electrical Engineers. All rts. reserv.

07593568 INSPEC Abstract Number: A2000-12-7570P-033, B2000-06-3120B-034

Title: Antiparallel pinned NiO spin valve sensor for GMR head application

Author(s): Pinarbasi, M.; Metin, S.; Gill, H. ; Parker, M.; Gurney, B.; Carey, M.; Tsang, C.

Author Affiliation: Storage Syst. Div., IBM Corp., San Jose, CA, USA

Journal: Journal of Applied Physics Conference Title: J. Appl. Phys. (USA) vol.87, no.9, pt.1-3 p.5714-19

Publisher: AIP,

Publication Date: 1 May 2000 Country of Publication: USA

CODEN: JAPIAU ISSN: 0021-8979

SICI: 0021-8979(20000501)87:9:1/3L.5714:APSV;1-3

Material Identity Number: J004-2000-009

U.S. Copyright Clearance Center Code: 0021-8979/2000/87(9)/5714(6)/\$17.00

Conference Title: 44th Annual Conference on Magnetism and Magnetic Materials

Conference Date: 15-18 Nov. 1999 Conference Location: San Jose, CA, USA

Language: English

Subfile: A B

Copyright 2000, IEE

Author(s): Pinarbasi, M.; Metin, S.; Gill, H. ; Parker, M.; Gurney, B.; Carey, M.; Tsang, C.

...Abstract: These topics and other improvements which resulted in successful use of NiO spin valves as **GMR heads in hard disk drives** will be discussed.

16/3,K/2 (Item 1 from file: 8)

DIALOG(R)File 8:Ei Compendex(R)

(c) 2006 Elsevier Eng. Info. Inc. All rts. reserv.

04370161 E.I. No: EIP96043117473

Title: Biarticulating two-dimensional computer model of the human patellofemoral joint

Author: Gill, H.S. ; O'Connor, J.J.

Corporate Source: Univ of Oxford, Oxford, UK

Source: Clinical Biomechanics v 11 n 2 Mar 1996. p 81-89

Publication Year: 1996

CODEN: CLBIEW ISSN: 0268-0033

Language: English

Author: Gill, H.S. ; O'Connor, J.J.

Identifiers: Patellofemoral joint; Mediolateral **axis** ; Knee flexion **angles** ; Total knee replacement

16/3,K/3 (Item 1 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

(c) 2006 The Thomson Corp. All rts. reserv.

08627274 Genuine Article#: 308RT No. References: 15

Title: Antiparallel pinned NiO spin valve sensor for GMR head application (invited)

Author(s): Pinarbasi M (REPRINT) ; Metin S; Gill H ; Parker M; Gurney B; Carey M; Tsang C

Corporate Source: IBM CORP,STORAGE SYST DIV/SAN JOSE//CA/95193 (REPRINT);
IBM CORP,ALMADEN RES CTR/SAN JOSE//CA/95193
Journal: JOURNAL OF APPLIED PHYSICS, 2000, V87, N9,2 (MAY 1), P5714-5719
ISSN: 0021-8979 Publication date: 20000501
Publisher: AMER INST PHYSICS, 2 HUNTINGTON QUADRANGLE, STE 1N01, MELVILLE,
NY 11747-4501
Language: English Document Type: ARTICLE (ABSTRACT AVAILABLE)

Author(s): Pinarbasi M (REPRINT) ; Metin S; Gill H ; Parker M; Gurney B;
Carey M; Tsang C

...Abstract: These topics and other improvements which resulted in
successful use of NiO spin valves as **GMR heads** in **hard disk**
drives will be discussed. (C) 2000 American Institute of Physics.
[S0021-8979(00)73308-1].

File 9:Business & Industry(R) Jul/1994-2006/Jul 27
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 (c) 2006 ProQuest Info&Learning
 File 16:Gale Group PROMT(R) 1990-2006/Jul 27
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 (c) 2006 Dialog
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 (c) 2006 The Gale group
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 (c) 2006 The HW Wilson Co.
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 (c) 1999 The Gale Group
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 (c) 2006 The Gale Group
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 (c) 2006 Dialog
 File 484:Periodical Abs Plustext 1986-2006/Jul W4
 (c) 2006 ProQuest
 File 553:Wilson Bus. Abs. 1982-2006/Jul
 (c) 2006 The HW Wilson Co
 File 570:Gale Group MARS(R) 1984-2006/Jul 27
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 (c) 2006 Economist Intelligence Unit
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 File 624:McGraw-Hill Publications 1985-2006/Jul 28
 (c) 2006 McGraw-Hill Co. Inc
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 (c) 2006 San Jose Mercury News
 File 635:Business Dateline(R) 1985-2006/Jul 28
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 (c) 2006 The Gale Group
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 (c) 2006 CMP Media, LLC
 File 696:DIALOG Telecom. Newsletters 1995-2006/Jul 27
 (c) 2006 Dialog
 File 674:Computer News Fulltext 1989-2006/Jul W3
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 (c) 1999 Business Wire
 File 813:PR Newswire 1987-1999/Apr 30
 (c) 1999 PR Newswire Association Inc
 File 587:Jane's Defense&Aerospace 2006/Jul W4
 (c) 2006 Jane's Information Group

Set	Items	Description
S1	369650	MAGNETIC(3N)STORAGE OR HDD OR HARD() (DISC OR DISK) ()DRIVE??

```

OR HARD()DRIVE??
S2      6639  (HEAD?? OR PICK()UP OR PICKUP OR TRANSDUCER?? OR SLIDER?? -
OR READ()SENSOR?? OR WRITER???) (10N)S1
S3      1162  (MAGNETORESISTIVE OR MR OR GMR OR (GIANT OR COLOSSAL) () (MA-
GNETORESISTIVE OR MAGNETO()RESISTIVE) OR SVMR OR SV OR TJ OR -
TMR OR TJMR OR TUNNEL()JUNCTION OR SPIN()VALVE OR SPIN()BULB)-
(10N)S2
S4      12    ((AP OR ANTI()PARALLEL OR SAF OR SELF) (3N) (PINNED OR FIXED)
OR FERRIMAGNETIC?(3N)COUPL??? OR RKKY) (5N) (LAYER?? OR LAMINA-
R??)
S5      4466  (AXIS OR AXIS(2N)MAGNET?) (3N) (CANTED OR SLANTED OR INCLINED
OR DIAGONAL OR OBLIQUE OR ANGLE?? OR DEGREE??)
S6      9     (ABS OR AIR()BEARING()SURFACE?? OR FACING) (10N)S5
S7      74    AU=(GILL, H? OR GILL H?)
S8      0     S3 AND S4
S9      0     S3(S) (S5 OR S6)
S10     0     S3 AND (S5 OR S6)
S11     0     S4(S) (S5 OR S6)
S12     0     S3 AND S7
S13     0     S4 AND S7
S14     0     S2 AND S7
S15     0     S1 AND S7
S16     12    RD S4 (unique items)
S17     9     S16 NOT PY>2004
S18     6     RD S6 (unique items)
S19     6     S18 NOT S17

```

17/3,K/1 (Item 1 from file: 9)
DIALOG(R)File 9:Business & Industry(R)
(c) 2006 The Gale Group. All rts. reserv.

01608656 Supplier Number: 24316152 (USE FORMAT 7 OR 9 FOR FULLTEXT)
Furniture maker speeds up with espirito de Punto
(Reproduction furniture manufacturer PJ Lowe installs a CB Punto wide-belt sander)
TTJ - Timber & Wood Products, p 20
July 04, 1998
DOCUMENT TYPE: Journal ISSN: 1463-032X (United Kingdom)
LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 180

TEXT:
...Lowe selected the Punto, supplied by RW Machines, to sand jointed veneers up to five **layers** thick and **fixed** with **self** -adhesive paper tape; removing the tape without damaging the surface of the veneer was the ...

17/3,K/2 (Item 1 from file: 88)
DIALOG(R)File 88:Gale Group Business A.R.T.S.
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07165590 SUPPLIER NUMBER: 131932222
Magnetoresistance and interlayer coupling in spin valves employing very thin Cu spacer.
S. Jo; Seigler, M.
Journal of Applied Physics, 91, 10, 7110-7112
May 15, 2002
ISSN: 0021-8979 LANGUAGE: English RECORD TYPE: Abstract

...ABSTRACT: the thin CoFe and Cu layers may be utilized for very small devices where the **RKKY** coupling of the **layers** is dominated by high demagnetizing fields.

17/3,K/3 (Item 2 from file: 88)
DIALOG(R)File 88:Gale Group Business A.R.T.S.
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07041003 SUPPLIER NUMBER: 125787139
Micromagnetic simulation for tunnel junctions with synthetic antiferromagnetic pinned layers annealed at different external fields.
Yaowen Liu; Zongzhi Zhang; Zhengang Zhang; Freitas, P.P.; Martins, J.L.
Journal of Applied Physics, 91, 10, 8296(3)
May 15, 2002
ISSN: 0021-8979 LANGUAGE: English RECORD TYPE: Abstract

...ABSTRACT: micromagnetic method for the simulation of the annealing process of tunnel junctions with synthetic antiferromagnetic (**SAF**) **pinned layers** is discussed. The measured low tunnel magnetoresistance (TMR) signal is a result of the orthogonal...

17/3,K/4 (Item 3 from file: 88)
DIALOG(R)File 88:Gale Group Business A.R.T.S.
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06900177 SUPPLIER NUMBER: 122261526
70% TMR at room temperature for SDT sandwich junctions with CoFeB as free and reference layers. (Author Abstract)
Wang, Dexin; Nordman, Cathy; Daughton, James M.; Qian, Zhenghong; Fink, Jonathon
IEEE Transactions on Magnetics, 40, 4, 2269(3)
July, 2004
DOCUMENT TYPE: Author Abstract ISSN: 0018-9464 LANGUAGE: English
RECORD TYPE: Abstract

...AUTHOR ABSTRACT: to pin the amorphous CoFeB directly from the top, the use of a synthetic antiferromagnet (**SAF**) **pinned layer** structure allows sufficient rigidity of the reference CoFeB layer. The tunnel junctions were annealed at...

17/3,K/5 (Item 4 from file: 88)
DIALOG(R)File 88:Gale Group Business A.R.T.S.
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06300487 SUPPLIER NUMBER: 94130411
Quasi-static and dynamic analysis of spin valve tape heads with synthetic free and pinned layers versus heads with a conventional free layer and a synthetic pinned layer. (Abstract)
Veloso, Anabela; Dee, Richard H.; Freitas, Paulo P.
IEEE Transactions on Magnetics, 38, 5, 1928(3)
Sept, 2002
DOCUMENT TYPE: Abstract ISSN: 0018-9464 LANGUAGE: English
RECORD TYPE: Abstract

...AUTHOR ABSTRACT: tape heads with two spin-valve designs is presented: spin valves with synthetic free and **pinned layers** (SF- **SAF** /AF) versus spin valves with a conventional free **layer** and a synthetic **pinned layer** (**SAF** /AF). The SF **layer** , corresponding to a smaller free layer's effective magnetic thickness ((t.sub.eff,SF) ~ 28...

17/3,K/6 (Item 5 from file: 88)
DIALOG(R)File 88:Gale Group Business A.R.T.S.
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05726554 SUPPLIER NUMBER: 72611490
3-D FEM Micromagnetic Modeling of Spin-Valve Sensors.
Zheng, Yuankai; Wu, Yihong; Chong, Towchong
IEEE Transactions on Magnetics, 36, 5, 3158
Sept, 2000
ISSN: 0018-9464 LANGUAGE: English RECORD TYPE: Abstract

...AUTHOR ABSTRACT: current field is not only helpful to bias the signal, but also to stabilize the **SAF** **pinned layer** because the current in the Co layers produces opposing fields in the layers. The thermal...

17/3,K/7 (Item 6 from file: 88)
DIALOG(R)File 88:Gale Group Business A.R.T.S.
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03296399 SUPPLIER NUMBER: 16050126
Chemistry and physics of a molecular-based magnet containing three spin

carriers, with a fully interlocked structure.

Stumpf, Humberto O.; Ouahab, Lahcene; Pei, Yu; Bergerat, Pierre; Kahn, Olivier

Journal of the American Chemical Society, v116, n9, p3866(9)

May, 1994

ISSN: 0002-7863

LANGUAGE: English

RECORD TYPE: Abstract

...ABSTRACT: character and the connection between two networks is though nitronyl nitroxide radical cations. The Mn₂Cu₃ **ferrimagnetic layers** are antiferromagnetically **coupled** with the metal core and magnetically coupled with each other by the cation radicals. This...

17/3,K/8 (Item 7 from file: 88)

DIALOG(R)File 88:Gale Group Business A.R.T.S.

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03214682 SUPPLIER NUMBER: 14567295

A molecular-based magnet with a fully interlocked three-dimensional structure.

Stumpf, Humberto O.; Ouahab, Lahcene; Pei, Yu; Grandjean, Daniel; Kahn, Olivier

Science, v261, n5120, p447(3)

July 23, 1993

ISSN: 0036-8075

LANGUAGE: English

RECORD TYPE: Abstract

...AUTHOR ABSTRACT: ferrimagnets in which the [rad.sub.+] cations, which connect the two networks, favor a ferromagnetic **coupling** between the **ferrimagnetic layers**. It is possible that stronger [Cu(II)-rad.sup.+] apical interactions would give a [T...

17/3,K/9 (Item 1 from file: 112)

DIALOG(R)File 112:UBM Industry News

(c) 2004 United Business Media. All rts. reserv.

01136945 (USE FORMAT 7 OR 9 FOR FULLTEXT)

Furniture maker speeds up with espirito de Punto,

Timber & Wood Products, p 20

July 04, 1998

LANGUAGE: English RECORD TYPE: Fulltext DOC. TYPE: Journal

WORD COUNT: 00000190

(USE FORMAT 7 OR 9 FOR FULLTEXT)

TEXT:

...Lowe selected the Punto, supplied by RW Machines, to sand jointed veneers up to five **layers** thick and **fixed** with **self**-adhesive paper tape; removing the tape without damaging the surface of the veneer was the

File 344:Chinese Patents Abs Jan 1985-2006/Jan
(c) 2006 European Patent Office
File 347:JAPIO Dec 1976-2005/Dec(Updated 060404)
(c) 2006 JPO & JAPIO
File 350:Derwent WPIX 1963-2006/UD=200647
(c) 2006 The Thomson Corporation
File 371:French Patents 1961-2002/BOPI 200209
(c) 2002 INPI. All rts. reserv.

Set	Items	Description
S1	35548	MAGNETIC(3N)STORAGE OR HDD OR HARD() (DISC OR DISK) () DRIVE?? OR HARD() DRIVE??
S2	5978	(HEAD?? OR PICK()UP OR PICKUP OR TRANSDUCER?? OR SLIDER?? - OR READ() SENSOR?? OR WRITER???) (10N) S1
S3	609	(MAGNETORESISTIVE OR MR OR GMR OR (GIANT OR COLOSSAL) () (MA- GNETORESISTIVE OR MAGNETO() RESISTIVE) OR SVMR OR SV OR TJ OR - TMR OR TJMR OR TUNNEL() JUNCTION OR SPIN() VALVE OR SPIN() BULB)- (10N) S2
S4	243	((AP OR ANTI() PARALLEL OR SAF OR SELF) (3N) (PINNED OR FIXED) OR FERRIMAGNETIC? (3N) COUPL??? OR RKKY) (5N) (LAYER?? OR LAMINA- R??)
S5	66831	(AXIS OR AXIS(2N) MAGNET?) (3N) (CANTED OR SLANTED OR INCLINED OR DIAGONAL OR OBLIQUE OR ANGLE?? OR DEGREE??)
S6	370	(ABS OR AIR() BEARING() SURFACE?? OR FACING) (10N) S5
S7	354	AU=(GILL, H? OR GILL H?)
S8	0	S3(3N) S4
S9	7	S3(S) S4
S10	5	S9 AND (S5:S7)
S11	2	S9 NOT S10
S12	1	S4(3N) (S5 OR S6)
S13	1	S12 NOT S9
S14	0	S3(3N) (S5:S7)
S15	0	S3(S) (S5:S7)
S16	0	(S1 OR S2) (3N) (S5:S7)

10/3,K/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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0015350259 - Drawing available
WPI ACC NO: 2005-700518/200572
XRAM Acc No: C2005-213054
XRPX Acc No: N2005-574699

Dual current-perpendicular-to-plane giant magnetoresistive sensor for detecting magnetic field signals in magnetic hard disk drives, has spin valve structure having dual spin valve arrangement with top and bottom spin self-pinned layers

Patent Assignee: HITACHI GLOBAL TECHNOLOGIES NETHERLANDS (HITA-N)
Inventor: GILL H S

Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update
US 20050213258	A1	20050929	US 2004811525	A	20040329	200572 B

Priority Applications (no., kind, date): US 2004811525 A 20040329

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing	Notes
US 20050213258	A1	EN	14	8		

Inventor: GILL H S

Alerting Abstract ...comprising a magnetic storage medium having tracks for recording of data; and a dual CPP **GMR** sensor maintained in a closely spaced position relative to the **magnetic storage** medium during relative motion between the magnetic **transducer** and the **magnetic storage** medium; and a method for providing a dual CPP **GMR** sensor with improved top pinning, comprising forming a first magnetic shield of an electrically conductive...

...dual spin valve arrangement, the dual spin valve arrangement having a top and bottom spin **self - pinned layer** and a free ferromagnetic **layers** disposed in-between; and forming a biasing **layer** disposed proximate the top **self - pinned layer** in a passive region for pinning the top **self - pinned layer**

...

...563 **Self - pinned layer**

Original Publication Data by Authority

Inventor name & address:
Gill, Hardayal Singh ...

10/3,K/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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0015338697 - Drawing available
WPI ACC NO: 2005-688950/200571
XRAM Acc No: C2005-209635
XRPX Acc No: N2005-565441

Current-in-plane giant magnetoresistance sensor used in mass storage

devices e.g. magnetic disk and tape drives, has giant magnetoresistance sensor stack, spacer layer formed over free-layer of sensor stack, and in-stack biasing layer

Patent Assignee: HITACHI GLOBAL TECHNOLOGIES NETHERLANDS (HITA-N)

Inventor: GILL H S

Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update
US 20050213263	A1	20050929	US 2004811524	A	20040329	200571 B

Priority Applications (no., kind, date): US 2004811524 A 20040329

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing	Notes
US 20050213263	A1	EN	10	7		

Inventor: GILL H S

Alerting Abstract ...512 Self - pinned layer

Original Publication Data by Authority

Inventor name & address:

Gill, Hardayal Singh ...

10/3,K/3 (Item 3 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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0014982403 - Drawing available

WPI ACC NO: 2005-330252/200534

XRAM Acc No: C2005-102789

XRPX Acc No: N2005-270007

Fabrication of differential giant magnetoresistive sensor for magnetic storage device, by forming first self-pinned giant magnetoresistive sensor, bias structure, and second self-pinned giant magnetoresistive sensor

Patent Assignee: HITACHI GLOBAL TECHNOLOGIES NETHERLANDS (HITA-N)

Inventor: GILL H S

Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update
US 20050068683	A1	20050331	US 2003672992	A	20030926	200534 B

Priority Applications (no., kind, date): US 2003672992 A 20030926

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing	Notes
US 20050068683	A1	EN	18	10		

Inventor: GILL H S

Alerting Abstract ...spacer layer, and a second free layer, and a magnetic disk recording system comprising a magnetic storage medium having tracks for recording data; and a magnetic transducer maintained in a closely spaced position relative to the magnetic storage medium during relative motion between the magnetic transducer and magnetic storage medium, and including a magnetoresistive read sensor that is the above differential GMR sensor...

Original Publication Data by Authority

Inventor name & address:

Gill, Hardayal Singh ...

10/3,K/4 (Item 4 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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0014783025 - Drawing available

WPI ACC NO: 2005-130706/200514

XRFX Acc No: N2005-111963

Magnetoresistive read head of magnetic disk drive, includes anti-parallel pinned layers with one layer wider than free layer that is above pinned layers

Patent Assignee: HITACHI GLOBAL STORAGE TECHNOLOGIES NETH (HITA-N)

Inventor: GILL H S

Patent Family (2 patents, 1 countries)

Patent			Application			Update	
Number	Kind	Date	Number	Kind	Date		
US 20050013061	A1	20050120	US 2003622936	A	20030718	200514	B
US 7035059	B2	20060425	US 2003622936	A	20030718	200628	E

Priority Applications (no., kind, date): US 2003622936 A 20030718

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing	Notes
US 20050013061	A1	EN	19	12		

Inventor: GILL H S

Alerting Abstract ...ADVANTAGE - The **anti - parallel**0 pinning of the **pinned layers** is stronger due to the provision of wider lower pinned layer...

Original Publication Data by Authority

Inventor name & address:

Gill, Hardayal Singh ...

... Gill, Hardayal Singh

10/3,K/5 (Item 5 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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0013101487 - Drawing available

WPI ACC NO: 2003-182768/

XRFX Acc No: N2003-143796

Magnetic reproducing head of magnetic disk drive, has antiparallel pinned layer structure and biasing layer of spin valve sensor, that apply parallel demagnetizing fields on ferromagnetic free layer

Patent Assignee: HITACHI GLOBAL STORAGE TECHNOLOGIES NETH (HITA-N); INT BUSINESS MACHINES CORP (IBMC)

Inventor: GILL H S

Patent Family (2 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	
US 20020163765	A1	20021107	US 2001832248	A	20010409	200318	B
US 6674616	B2	20040106	US 2001832248	A	20010409	200411	E

Priority Applications (no., kind, date): US 2001832248 A 20010409

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing	Notes
US 20020163765	A1	EN	16	11		

Inventor: GILL H S

Alerting Abstract ...204 AP pinned layer structure...

Original Publication Data by Authority

Inventor name & address:

Gill, Hardayal Singh ...

... Gill, Hardayal Singh

11/3,K/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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0015846866 - Drawing available
WPI ACC NO: 2006-044315/200605
Related WPI Acc No: 2005-329917
XRPX Acc No: N2006-037898

Magnetic head for magnetic disk drive used in computer, has antiparallel pinned layer structure formed directly on nickel-iron-chromium seed layer
Patent Assignee: HITACHI GLOBAL STORAGE TECHNOLOGIES NETH (HITA-N)
Inventor: PINARBASI M M

Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update
US 20050270706	A1	20051208	US 2003671377	A	20030924	200605 B
			US 2005201940	A	20050810	

Priority Applications (no., kind, date): US 2003671377 A 20030924; US 2005201940 A 20050810

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing	Notes
US 20050270706	A1	EN	17	11	Continuation of application	US 2003671377

Alerting Abstract ...ADVANTAGE - Absence of anti-ferromagnetic **layer** between **AP pinned layer** structure and seed **layer**, maximizes the giant magnetoresistive (GMR) signal of head and/or magnetorestriction of pinned layer...

11/3,K/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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0015696963 - Drawing available
WPI ACC NO: 2006-260950/200627
XRAM Acc No: C2006-085161
XRPX Acc No: N2006-223299

Pinned layer in guided mode resonance stack comprises cobalt-iron ternary alloy layer with constituted selected for increasing resistance and magnetoelastic anisotropy of cobalt-iron ternary alloy layer over a cobalt-iron alloy layer

Patent Assignee: LI J (LIJJ-I); ZELTSER A M (ZELT-I)
Inventor: LI J; ZELTSER A M

Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update
US 20060067012	A1	20060330	US 2004955396	A	20040930	200627 B

Priority Applications (no., kind, date): US 2004955396 A 20040930

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing	Notes
US 20060067012	A1	EN	14	9		

Alerting Abstract ...USE - For use as pinned layer in guided mode resonance (GMR) stack for a magnetic read head used in a magnetic storage device...

13/3,K/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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0015296824 - Drawing available
WPI ACC NO: 2005-646992/200566
XRAM Acc No: C2005-194848
XRPX Acc No: N2005-529928

Magnetic head with air bearing surface for magnetic disk drive, has a free layer, and an antiparallel pinned layer structure with antiparallel-pinned layers with magnetic moments that are self-pinned antiparallel to each other

Patent Assignee: HITACHI GLOBAL STORAGE TECHNOLOGIES NETH (HITA-N)

Inventor: GILL H S

Patent Family (1 patents, 1 countries)

Patent	Application
Number	Kind Date Number Kind Date Update
US 20050190508	A1 20050901 US 2004788688 A 20040226 200566 B

Priority Applications (no., kind, date): US 2004788688 A 20040226

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing	Notes
US 20050190508	A1	EN	18	11		

Original Titles:

Canted easy axis in self - pinned layers